

CHANGE 3

EFFECTIVE: DECEMBER 28, 1995  
JANUARY 15, 1996  
MARCH 11, 1996

## Part 1—Definitions and Abbreviations

This change incorporates three amendments:

Amendment 1-41, Revision of Authority Citations, effective December 28, 1995;

Amendment 1-42, Definitions of Special Use Airspace, effective January 15, 1996; and

Amendment 1-43, Airworthiness Standards; Flight Rules Based on European Joint Aviation Requirements, effective March 11, 1996.

Page P-231 has been corrected; please insert new page.

Bold brackets enclose the most recently changed and added material. The amendment number and effective date of the new material appear in bold brackets at the end of the section.

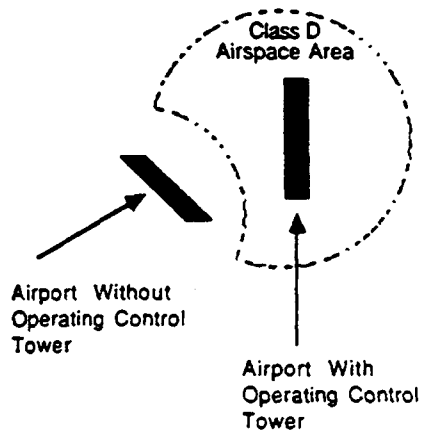
### Page Control Chart

Remove Pages	Dated	Insert Pages	Dated
P-231 and P-232	—	P-231 and P-232	(Corrected)
P-249 and P-250	Ch. 2	P-249 through P-272	Ch. 3
1 through 10	Ch. 2	1 through 10	Ch. 3

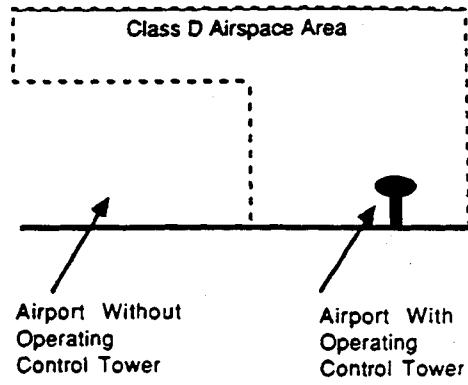
Suggest filing this transmittal at the beginning of the FAR. It will provide a method for determining that all changes have been received as listed in the current edition of AC 00-44, Status of Federal Aviation Regulations, and a check for determining if the FAR contains the proper pages.



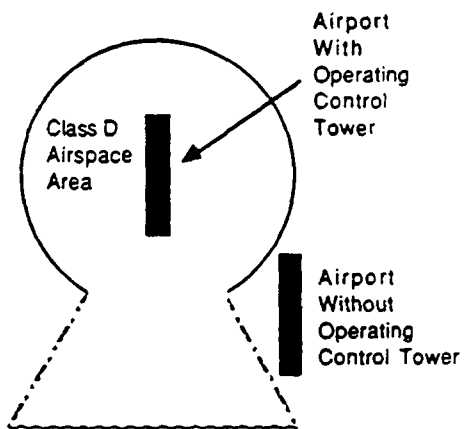
### Cutout Method



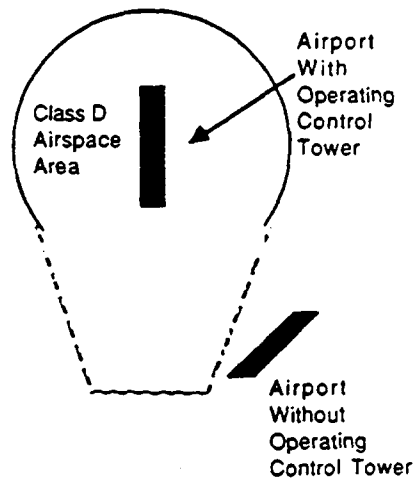
### Shelf Method



### TERPS' Trapezoid Going Toward the NAVAID



### TERPS' Trapezoid Going Away from the NAVAID



(Corrected)

towers, transition areas, and area low routes. The five comments submitted on this proposal neither supported nor opposed the proposal, but offered suggestions.

One commenter noted that the current names are descriptions of how the airspace area is to be used (i.e., transition areas, airways) and that under the proposal, airways would still be necessary. The SSA recommended the continued use of the term "control zone" for airspace extending upward from the surface that is independent of Class B, Class C, or Class D airspace areas. They also recommended that control zones should extend to the floor of overlying controlled airspace. One commenter recommended that the floor of Class E airspace areas that are now 1,200 feet above ground level (AGL) be raised to 1,500 or 2,200 feet AGL and noted that the floor of Class E airspace areas should not be below the minimum en route IFR altitude (MEA) in mountainous regions.

The FAA will adopt the classification of Class E airspace areas as proposed. This classification will not eliminate the requirement for Federal airways, which are specified in part 71. However, this classification will eliminate the designation of control zones. Control zones for airports without operating control towers are classified as Class E airspace areas designated for an airport that extend upward from the surface.

The FAA believes that the reclassification of control zones for airports without operating control towers as Class E airspace areas will not cause confusion. As noted earlier, such airspace areas will be depicted on visual aeronautical charts by a segmented magenta line. Under existing regulations, a control zone usually has a 5-statute mile radius and ascends to the base of the Continental Control Area. The FAA's review process, using the revised criteria in FAA Order 7400.2C, will look at the dimensions of each control zone and associated transition areas. Each review will include a review of instrument approach procedures, as well as local terrain to determine the actual airspace needed to contain IFR operations.

The floor of Class E airspace areas, which do not extend upward from the surface, will remain the same as existing airspace areas (e.g., 700 feet AGL, 1,200 feet AGL, 1,500 feet AGL, 14,500 feet MSL). Any modifications to the floor of Class E airspace areas are beyond the scope of this rulemaking.

### **Class G Airspace**

NPRM No. 89-28 proposed to reclassify airspace that is not otherwise designated as the Continental Control Area, a control area, a control zone, a terminal control area, a transition area, or SUA as Class G airspace areas. Of the six comments submitted, four comments opposed the proposal and two offered suggestions.

The four opposing comments, including EAA's comment, understood the Class G airspace areas to be airspace below 700 feet AGL.

The two comments that neither supported nor opposed the proposal included the comment from the ATA. The ATA recommended that Class G airspace areas be designated as Class F airspace areas.

The FAA has determined that all navigable airspace areas not otherwise designated as Class A, Class B, Class C, Class D, or Class E airspace areas or SUA are classified as Class G airspace areas. Since the proposal to replace the Continental Control Area with the U.S. control area in NPRM No. 88-2 was not adopted, the vertical limit of Class G airspace areas will vary (e.g., 700 feet AGL, 1,200 feet AGL, 1,500 feet AGL, 14,500 feet MSL). In addition, the flight visibility and distance from cloud requirements for operations under VFR proposed in NPRM No. 89-28 are modified to remain consistent with the existing requirements in §§ 91.155 and 103.23.

Class F airspace is omitted from the U.S. airspace classifications because this airspace, as adopted by ICAO, does not have a U.S. equivalent. Class G airspace, as adopted by ICAO, is the equivalent of U.S. uncontrolled airspace.

Three principal requirements pertain to the economic impacts of changes to the Federal Aviation Regulations. First, Executive Order 12866 directs Federal agencies to promulgate new regulations or modify existing regulations only if the expected benefits to society outweigh the expected costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic impact of regulatory changes on small entities. Finally, the Office of Management and Budget directs agencies to assess the effect of regulatory changes on international trade. In conducting these analyses, the FAA has determined that this rule: (1) will generate benefits exceeding costs; (2) is not "significant" as defined in the Executive Order and the Department of Transportation's (DOT) policies and procedures; (3) will not have a significant impact on a substantial number of small entities; and (4) will lessen restraints on international trade. These analyses, available in the docket, are summarized below.

#### *Cost Benefit Analysis*

Three of the 48 provisions will require additional flight testing and engineering analysis, resulting in compliance costs of \$18,500 per type-certification, or about \$37 per airplane when amortized over a representative production run of 500 airplanes. The primary benefits of the rule are harmonization of flight test airworthiness standards with the European Joint Aviation Requirements and clarification of existing standards. The resulting increased uniformity of flight test standards will simplify airworthiness approvals and reduce overall flight testing costs. While not readily quantifiable, these benefits will far exceed the incremental costs of the rule.

#### *Regulatory Flexibility Determination*

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily or disproportionately burdened by Federal regulations. The RFA requires a Regulatory Flexibility Analysis if a rule will have a significant economic impact, either detrimental or beneficial, on a substantial number of small entities. FAA Order 2100.14A, Regulatory Flexibility Criteria and Guidance, prescribes standards for complying with RFA review requirements in FAA rulemaking actions. The Order defines "small entities" in terms of size thresholds, "significant economic impact" in terms of annualized cost thresholds, and "substantial number" as a number which is not less than eleven and which is more than one-third of the small entities subject to the proposed or final rule.

The rule will affect manufacturers of transport category airplanes produced under future new airplane type certifications. For manufacturers, Order 2100.14A specifies a size threshold for classification as a small entity as 75 or fewer employees. Since no part 25 airplane manufacturer has 75 or fewer employees, the rule will not have a significant economic impact on a substantial number of small airplane manufacturers.

#### *Trade Impact Assessment*

This final rule will not constitute a barrier to international trade, including the export of American airplanes to foreign countries, and the import of foreign airplanes into the United States. Instead, the flight testing standards have been harmonized with those of foreign aviation authorities, thereby lessening restraints on trade.

#### **Federalism Implications**

This final rule will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this final rule will not have sufficient federalism implications to warrant preparing a Federalism Assessment.

#### **Conclusion**

Because the changes to standardize specific flight requirements of part 25 of the FAR are not expected to result in substantial economic cost, the FAA has determined that this regulation is not significant under Executive Order 12866. Because this is an issue that has not prompted a great deal of public

in consideration of the foregoing, the Federal Aviation Administration (FAA) amends 14 CFR parts 1 and 25 of the Federal Aviation Regulations (FAR) effective July 10, 1995.

The authority citation for part 1 continues to read as follows:

*Authority:* 49 U.S.C. app. 1347, 1348, 1354(a), 1357(d)(2), 1372, 1421 through 1430, 1432, 1442, 1443, 1472, 1510, 1522, 1652(e), 1655(c), 1657(f), and 49 U.S.C. 106(g).

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## **Amendment 1-41**

### **Revision of Authority Citations**

**Adopted: December 20, 1995**

**Effective: December 28, 1995**

**(Published in 60 FR 67254, December 28, 1995)**

**SUMMARY:** This rule adopts new authority citations for Chapter I of Title 14 of the Code of Federal Regulations (CFR). In 1994, the Federal Aviation Act of 1958 and several other statutes conferring authority upon the Federal Aviation Administration were recodified into positive law. This document updates the authority citations listed in the Code of Federal Regulations to reference the current law.

**DATES:** This final rule is effective December 28, 1995. Comments on this final rule must be received by March 1, 1996.

**FOR FURTHER INFORMATION CONTACT:** Karen Petronis, Office of the Chief Counsel, Regulations Division (AGC-210), Federal Aviation Administration, 800 Independence Ave., SW., Washington, DC 20591; telephone (202) 267-3073.

**SUPPLEMENTARY INFORMATION:** In July 1994, the Federal Aviation Act of 1958 and numerous other pieces of legislation affecting transportation in general were recodified. The statutory material became "positive law" and was recodified at 49 U.S.C. 1101 *et seq.*

The Federal Aviation Administration is amending the authority citations for its regulations in Chapter I of 14 CFR to reflect the recodification of its statutory authority. No substantive change was intended to any statutory authority by the recodification, and no substantive change is introduced to any regulation by this change.

Although this action is in the form of a final rule and was not preceded by notice and an opportunity for public comment, comments are invited on this action. Interested persons are invited to comment by submitting such written data, views, or arguments as they may desire by March 1, 1996. Comments should identify the rules docket number (Docket No. 28417) and be submitted to the address specified under the caption "FOR FURTHER INFORMATION CONTACT."

Because of the editorial nature of this change, it has been determined that prior notice is unnecessary under the Administrative Procedure Act. It has also been determined that this final rule is not a "significant regulatory action" under Executive Order 12866, nor is it a significant action under DOT regulatory policies and procedures (44 FR 11034, February 26, 1979). Further, the editorial nature of this change has no known or anticipated economic impact; accordingly, no regulatory analysis has been prepared.

## Definitions of Special Use Airspace

Adopted: January 18, 1996

Effective: January 15, 1996

(Published in 61 FR 2080, January 24, 1996)

**SUMMARY:** This rule amends the Federal Aviation Regulations by adding the definitions of the various forms of special use airspace. Several categories of special use airspace currently are defined other than in the Regulations. This rule is needed to consolidate and define those categories in a single part, including the definitions of warning area and non-regulatory warning area found in Special Federal Aviation Regulation (SFAR) No. 53.

**FOR FURTHER INFORMATION CONTACT:** Mr. Joseph C. White, Air Traffic Rules Branch (ATP-230), Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591; telephone (202) 267-8783.

**SUPPLEMENTARY INFORMATION:****Background**

The FAA has determined that for purposes of clarification and conformity, it would be appropriate to include in part 1, Definitions and Abbreviations, the definitions of all categories of special use airspace. Special use airspace is defined in 14 CFR section 73.3(a) as airspace of defined dimensions wherein activities must be confined because of their nature, or wherein limitations are imposed upon aircraft operations that are not a part of those activities, or both. With the exception of "warning area," the definitions are the same definitions provided for these categories of airspace in the Aeronautical Information Manual and in FAA Order 7400.2, Procedures for Handling Airspace Matters. The codification of these currently accepted definitions into part 1 does not in any way affect the provisions that apply to these areas that are contained in parts 73 and 91. Nor does the inclusion of the definitions in part 1 impose any new operating restrictions.

In addition, this rule redefines the term "warning area," by consolidating the definitions of "warning area" and "non-regulatory warning area" found in SFAR 53 and codifies that term in part 1. Warning areas are defined in SFAR 53 as airspace of defined dimensions, extending from 3 to 12 nautical miles from the coast of this United States, which contain activity that may be hazardous to nonparticipating aircraft. The purpose of such warning areas is to warn nonparticipating pilots of the potential danger. This rule consolidates this definition with the definition of non-regulatory warning area found in SFAR 53. A non-regulatory warning area is an airspace of defined dimensions designated over *international* waters that contains activity which may be hazardous to nonparticipating aircraft. The FAA believes that combining the definition of a warning area with the definition of a non-regulatory warning area into a single definition is appropriate since the procedures that apply to these two areas are the same.

Presidential Proclamation No. 5928, issued on December 27, 1988, extended the sovereignty of the United States, for international purposes, over the territorial seas from 3 to 12 nautical miles from the coast of the United States (including its territories). Prior to Presidential Proclamation No. 5928, warning areas were only designated in international waters. SFAR 53, promulgated in response to Proclamation No. 5928, designated warning areas in domestic airspace. This rule defines a warning area as an area of airspace of defined dimension, extending from 3 nautical miles outward from the coast of the United States, that contains activity which may be hazardous to nonparticipating aircraft.

This rule will not alter any of the existing warning areas. The FAA does not envision any future additional warning areas or enlargement of the existing warning areas in domestic airspace. If new airspace

### **The Rule**

This amendment to 14 CFR part 1, Definitions and Abbreviations, to include the definitions of all types of special use airspace. Except for "warning areas," the definitions are the same definitions of the categories of special use airspace found in the Aeronautical Information Manual and FAA Order 7400.2, Procedures for Handling Airspace Matters and are familiar to and accepted by the flying community. The inclusion of these definitions in part 1 does not affect any provision currently contained in parts 73 and 91. Further, the inclusion of these definitions does not add any requirement or operating restriction to these categories of special use airspace. This rule also codifies the definition of warning area. As noted above, the definition of warning area will consolidate the definitions in SFAR 53 into a single definition of a warning area that applies to domestic airspace located from 3 to 12 nautical miles from the U.S. coast, as well as international airspace beyond the 12 nautical mile boundary from the coast.

### **International Civil Aviation Organization and Joint Aviation Regulations**

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to comply with International Civil Aviation organization Standards and Recommended Practices (SARP) to the maximum extent practicable.

### **Paperwork Reduction Act**

In accordance with the Paperwork Reduction Act of 1980 (Pub. L. 96-511), there are no requirements for information collection associated with this regulation.

### **Regulatory Evaluation**

This rule does not alter the provision of air traffic control (ATC) services, nor does it have an impact on ATC system users. This regulation merely adds a section of currently accepted definitions in 14 CFR part 1 without making any substantive revision to parts 73 and 91. Accordingly, because the costs of the rule are minimal or non-existent, a formal regulatory evaluation has not been prepared.

### **Regulatory Flexibility Act Determination**

The Regulatory Flexibility Act of 1980 (RFA) ensures that government regulations do not needlessly and disproportionately burden small businesses. The RFA requires the FAA to review each rule that may have a significant economic impact on a substantial number of small entities.

The regulation will not alter the provision of air traffic control (ATC) services, nor will it have an impact on ATC system users. Hence, this regulation will not impose a significant cost on a substantial number of small entities.

### **Federalism Implications**

The rule will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

### **International Trade Impact Assessment**

This rule will not constitute a barrier to international trade, including the export of U.S. goods and services to foreign countries and the import of foreign goods and services to the United States. This regulation will not impose costs on either U.S. or foreign operators. Therefore, a competitive trade disadvantage will not be incurred by either U.S. operators abroad or foreign operators in the United States.



## **The Amendment**

In consideration of the foregoing, the Federal Aviation Administration amends 14 CFR part 1 effective January 15, 1996.

The authority citation for part 1 continues to read as follows:

*Authority:* 49 U.S.C. 106(g), 40113, 44701.

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## **Amendment 1-43**

### **Airworthiness Standards; Flight Rules Based on European Joint Aviation Requirements**

**Adopted: January 29, 1996**

**Effective: March 11, 1996**

**(Published in 61 FR 5171, February 9, 1996)**

**SUMMARY:** This final rule amends the flight airworthiness standards for normal, utility, acrobatic, and commuter category airplanes. This amendment completes a portion of the Federal Aviation Administration (FAA) and the European Joint Aviation Authorities (JAA) effort to harmonize the Federal Aviation Regulations and the Joint Aviation Requirements (JAR) for airplanes certification in these categories. This amendment will provide nearly uniform flight airworthiness standards for airplanes certificated in the United States under 14 CFR part 23 and in the JAA countries under Joint Aviation Requirement 23, simplifying international airworthiness approval.

**FOR FURTHER INFORMATION CONTACT:** Lowell Foster (ACE-111), Small Airplane Directorate, Aircraft Certification Service, Federal Aviation Administration, 601 East 12th Street, Kansas City, Missouri 64106; telephone (816) 426-5688.

### **SUPPLEMENTARY INFORMATION:**

#### **Background**

This amendment is based on Notice of Proposed Rulemaking (NPRM) No. 94-22 (59 FR 37878, July 25, 1994). All comments received in response to Notice 94-22 have been considered in adopting this amendment.

This amendment completes part of an effort to harmonize the requirements of part 23 and JAR 23. The revisions to part 23 in this amendment pertain to flight airworthiness standards. Three other final rules are being issued in this *Federal Register* that pertain to airworthiness standards for systems and equipment, powerplant, and airframe. These related rulemakings are also part of the harmonization effort. Interested persons should review all four final rules to ensure that all revisions to part 23 are recognized.

The harmonization effort was initiated at a meeting in June 1990 of the JAA Council (consisting of JAA members from European countries) and the FAA, during which the FAA Administrator committed the FAA to support the harmonization of the United States regulations with the JAR that were being developed. In response to the commitment, the FAA Small Airplane Directorate established an FAA Harmonization Task Force to work with the JAR 23 Study Group to harmonize part 23 with the proposed JAR 23. The General Aviation Manufacturers Association (GAMA) also established a JAR 23/part 23 committee to provide technical assistance.

In January 1991, the FAA established the Aviation Rulemaking Advisory Committee (ARAC) (56 FR 2190, January 22, 1991). At an FAA/JAA Harmonization Conference in Canada in June 1992, the FAA announced that it would consolidate the harmonization effort within the ARAC structure. The FAA assigned to ARAC the rulemakings related to JAR/part 23 harmonization, which ARAC assigned to the JAR/FAR 23 Harmonization Working Group. The proposal for flight airworthiness standards contained in Notice No. 94-22 were a result of both the working group's efforts and the efforts at harmonization that occurred before the formation of the working group.

The JAA submitted comments to the FAA on January 20, 1994, in response to the four draft proposals for harmonization of the part 23 airworthiness standards. The JAA submitted comments again during the comment period of the NPRM. At the April 26, 1995, ARAC JAR/FAR 23 Harmonization Working Group meeting, the JAA noted that many of the comments in the January 20 letter had been satisfied or were no longer relevant. The few remaining items concern issues that are considered beyond the scope of this rulemaking and, therefore, will be dealt with at future FAA/JAA Harmonization meetings.

## **Discussion of Comments**

### *General*

Interested persons were invited to participate in the development of these final rules by submitting written data, views, or arguments to the regulatory docket on or before November 21, 1994. Four commenters responded to Notice No. 94-22. Minor technical and editorial changes have been made to the proposed rules based on relevant comments received, consultation with ARAC, and further review by the FAA.

## **Discussion of Amendments**

### *§ 1.1 General Definitions*

The FAA proposed to amend § 1.1 to add a definition of "maximum speed for stability characteristics,  $V_{FC}/M_{FC}$ ." This change harmonizes part 1 and JAR 1. The definition is deleted from § 23.175(b)(2).

No comments were received on the proposal for this section, and it is adopted as proposed.

### *§ 23.3 Airplane Categories*

The FAA proposed to revise § 23.3(b)(2) to add an outside limit of 90 degrees in angle of bank for lazy eights, chandelles, and steep turns.

The FAA proposed to revise § 23.3(d) to remove chandelles and lazy eights as approved operations in commuter category airplanes. The FAA does not anticipate any operational need for such maneuvers.

The FAA proposed to revise § 23.3(e) to prohibit type certification of commuter category airplanes in any other category. This rule change will not preclude the type certification of similar airplanes with different model numbers, such as the present Cessna models 500 and 501.

No comments were received on the proposals for this section, and they are adopted as proposed.

### *§ 23.25 Weight Limits*

The FAA proposed to revise § 23.25(a) to clarify that the maximum weight that must be selected is the least of the three choices given in § 23.25(a)(1). The FAA proposed to remove the commuter category zero fuel weight requirement from current § 23.25(a). The requirement was proposed to be moved to § 23.343 by the airframe NPRM, Notice No. 94-20 (59 FR 35198, July 8, 1994). The FAA proposed to remove the reference to standby power rocket engines in § 23.25(a)(1)(iii) and to remove appendix E because this is a rare and obsolete design feature. If a manufacturer proposed to use this approach, the FAA would issue special conditions to ensure adequate airworthiness.

No comments were received on the proposals for this section, and they are adopted as proposed.

In Notice of Proposed Rulemaking, Small Airplane Airworthiness Review Program Notice No. 4, Notice No. 90-18 (55 FR 26534, June 28, 1990), the FAA requested comments on the need for weight, altitude, and temperature (WAT) criteria, as information or as a limitation on piston-powered, twin-engine part 23 airplanes. The FAA also requested comments about WAT criteria on turbine-powered twin-engine part 23 airplanes, specifically during takeoff and landing.

WAT criteria is used to determine the maximum weight an airplane can have in relation to altitude and temperature for safe takeoff. This criteria provides pilots with the information needed to determine if a takeoff and climb can be successfully completed if one engine becomes inoperative. WAT criteria has been required under part 23 for commuter category airplanes, at all approved altitudes. A limited WAT criteria has been required for turbine engine-powered airplanes at 5,000 feet and at standard temperature plus 40 °F, but not for higher altitudes or temperatures. For multiengine powered airplanes, WAT data has been provided by the manufacturer as information to pilots.

The FAA received three comments on mandating WAT criteria in part 23 and addressed these comments in detail in the preamble to Notice 94-22.

Based on statistics and conclusions from an FAA 1991 study (discussed in detail in Notice 94-22) and on comments, the FAA determined that WAT limits are necessary for safe operation of multiengine airplanes of the type that will be involved in transporting passengers for hire.

The FAA proposed a complete revision of § 23.45 to require weight, altitude, and temperature (WAT) performance accountability for normal, utility, and acrobatic airplanes with a maximum takeoff weight over 6,000 pounds and all turbine-powered airplanes.

No comments were received on the proposal for this section, and it is adopted as proposed.

#### *§ 23.49 Stalling Speed*

The FAA proposed to revise § 23.49 by reorganizing and editing it for clarification. The FAA's proposed clarification merges, in paragraph (a), the  $V_{SO}$  and  $V_{S1}$  requirements, which were separated with parallel configuration items under paragraphs (a) and (d).

Other proposed changes to paragraph (a) are as follows:

(1) Proposed paragraph (a)(4) is a requirement that the airplane be in the condition existing in the test, in which  $V_{SO}$  and  $V_{S1}$  are being used.

(2) Proposed paragraph (a)(5) is a revised version of current paragraph (a)(6). The current requirement states that the center of gravity must be in the most unfavorable position within the allowable landing range. The proposed requirement would state that the center of gravity must be in the position that results in the highest value of  $V_{SO}$  and  $V_{S1}$ .

(3) Current paragraph (a)(5) is moved to § 23.45(c).

These changes are clarifying and are not an increase in requirements. The only comment received was from JAA, noting the existing disharmony between the JAR and the FAR concerning a  $V_{SO}$  more than 61 knots for single-engine airplanes and multiengine airplanes of 6,000 pounds maximum weight or less that do not meet the required minimum rate of climb.

The proposal is adopted as proposed.

#### *§ 23.51 Takeoff Speeds*

The FAA proposed to change the paragraph heading from "Takeoff" to "Takeoff speeds" and to incorporate the takeoff speed requirements currently contained in § 23.53. This revision to the heading and the reorganization of takeoff requirements is proposed for harmony with JAR 23.

under the general requirements in proposed § 23.45(f).

The FAA proposed to remove current § 23.51(d). The requirements are covered under § 23.45 in commuter category performance and other performance requirements, and the information requirements are covered under § 23.1587.

For multiengine normal, utility, and acrobatic category airplanes, the FAA proposed to transfer the determination of  $V_R$  from § 23.53(a) to § 23.51(a) with minor changes in the specified rotation speed. For multiengine airplanes in proposed paragraph (a)(1), the margin between rotation speed and  $V_{MC}$  or a margin of  $1.10 V_{S1}$  is established between  $V_R$  and stall.

The FAA proposed to define  $V_R$ , in proposed paragraph (a), as the speed at which the pilot makes a control input with the intention of lifting the airplane out of contact with the runway or water surface. This definition would apply to tail wheel and tricycle gear airplanes, seaplanes, and single-engine airplanes.

The FAA also proposed to include rotation speeds for single-engine airplanes, seaplanes, and amphibians in paragraph (a). This extends  $V_R$  applicability to all part 23 airplanes to establish a safe and standardized procedure that can be used by pilots to achieve AFM takeoff performance. This use of rotation speed is consistent with part 25.

In proposed paragraph (b), the speed at 50 feet is based on current § 23.53(b) with no change in requirements.

For commuter category airplanes, the FAA proposed to move the takeoff speed requirements from § 23.53(c) to proposed § 23.51(c) with editorial changes. The option is added, in proposed (c)(1)(i), for an applicant to determine a  $V_{MCG}$  and to establish a  $V_1$  based on  $V_{MCG}$  rather than a margin above  $V_{MCA}$ .

The only comment on this section was a non-substantive one, in which FAA concurred.

The proposal is adopted as proposed.

#### *§ 23.53 Takeoff Performance*

The FAA proposed a new heading for § 23.53 and a content based primarily on the general takeoff performance requirement of the current § 23.51.

The FAA proposed to remove the takeoff speed requirements from current § 23.53 and to place them in § 23.51. (See discussion for § 23.51.) Section 23.53 provides general takeoff performance requirements for normal, utility, acrobatic, and commuter category airplanes. Proposed paragraph (a) is based on current § 23.51(a). Proposed paragraph (b) is a modification of current § 23.1587(a)(5). Proposed paragraph (c) is based on current § 23.51(d).

No comments were received on the proposals for this section, and they are adopted as proposed.

#### *§ 23.55 Accelerate-Stop Distance*

The FAA proposed to revise § 23.55 to clarify the accelerate-stop segments and to make editorial changes.

The proposed requirement divides the accelerate-stop maneuver into three segments, rest to  $V_{EF}$  (paragraph (a)(1)),  $V_{EF}$  to  $V_1$  (paragraph (a)(2)), and  $V_1$  to rest (paragraph (a)(3)). The FAA proposed to remove the following four phrases: First, remove the phrase “in the case of engine failure,” from current § 23.55(a)(2) because it is included in paragraph (a)(2). Second, remove the phrase “assuming that . . . the pilot has decided to stop as indicated by application of the first retarding means at the speed  $V_1$ ,” from § 23.55(a)(2) because it is stated in § 23.51(c)(1)(ii). Third, remove the phrase “exceptional skill” from § 23.55(b)(3) because it remains in § 23.45(h)(5)(i). Fourth, remove the phrase “if that means

paragraph (c)(1) is revised to "not negative at any point," to allow acceleration in level flight, which is implied by current § 23.61(c). Proposed § 23.57(c)(3) specifies that the climb gradient "must not be less than . . .," as opposed to "may not be less than . . . ." The option, in current § 23.57(d), to determine the takeoff path either by continuous demonstration or by synthesis from segments, does not reflect current practice. The best method to determine the takeoff path from rest to 35 feet above the takeoff surface is by a continuous demonstration. The most practical method to determine the takeoff path from 35 feet to 1500 feet above the takeoff surface is by synthesis from segments. Accordingly, § 23.57, paragraphs (d) and (e), incorporates these changes.

No comments were received on the proposals for this section, and they are adopted as proposed.

#### *§ 23.59 Takeoff Distance and Takeoff Run*

The FAA proposed to clarify § 23.59 with no substantial change in requirements. A change to the opening text is proposed to clarify that the determination of takeoff run is the applicant's option since the applicant may choose not to present clearway data. In current § 23.59(a)(2) and (b)(2), the reference to "along the takeoff path," in a takeoff with all engines operating, is proposed to be removed since takeoff path is a one-engine-inoperative condition. Additionally, the FAA proposed to replace the reference to  $V_{LOF}$  with the words "liftoff point" to clarify that the requirements specify a point and related distance, not a speed.

No comments were received on the proposals for this section, and they are adopted as proposed.

#### *§ 23.63 Climbs: General*

The FAA proposed a new § 23.63 to assemble general climb requirements from current §§ 23.65 and 23.67 into a single section and to differentiate between WAT limited airplanes and those airplanes that are not WAT limited. (See discussion under § 23.45.) As proposed, new § 23.63(a)(1) requires that compliance be shown out of ground effect. This requirement is in current § 23.67(e), which applies to commuter category airplanes. New § 23.63(a)(3) requires that compliance must be shown, unless otherwise specified, with one-engine-inoperative, at a bank angle not exceeding 5 degrees. This requirement is in current § 23.149 and has been applied generally to part 23 airplanes except commuter category airplanes in certain circumstances.

No comments were received on the proposals for this section, and they are adopted as proposed.

#### *§ 23.65 Climb: All Engines Operating*

The FAA proposed to change the applicability of § 23.65(a) from "each airplane," as adopted in Amendment No. 23-45 (58 FR 42136, August 6, 1993), to "each normal, utility, and acrobatic category reciprocating engine-powered airplane of 6,000 pounds or less maximum weight." The FAA also proposed to change the phrase "angle of climb" to "climb gradient" and to establish the climb gradient at 8.3 percent for landplanes and 6.7 percent for seaplanes and amphibians with certain specified performance conditions.

In paragraph (a)(4), the FAA proposed to establish a minimum climb speed for multiengine airplanes of not less than the greater of  $1.1 V_{MC}$  and  $1.2 V_{S1}$ , which provides a margin above  $V_{MC}$ .

The FAA proposed to move cowl flap requirements, in current paragraph (a)(5), to proposed § 23.45(c).

The FAA proposed to remove § 23.65(b) since these requirements should have been removed in Amendment No. 23-45 (58 FR 42136, August 6, 1993). Since the adoption of Amendment No. 23-45, there is no longer a rate of climb requirement in § 23.65(a).

The FAA proposed to add WAT limits to § 23.65(b), for reciprocating engine-powered airplanes of more than 6,000 pounds maximum weight and turbine engine-powered airplanes. (See § 23.45 discussion.)

No comments were received on the proposals for this section, and they are adopted as proposed.

#### *§ 23.66 Takeoff Climb; One-Engine-Inoperative*

The FAA proposed a new § 23.66 to require the determination of the one-engine-inoperative climb capability of all WAT limited reciprocating engine-powered and turbine engine-powered airplanes immediately after takeoff. Since most reciprocating engine-powered airplanes do not have autofeather, the condition immediately after takeoff can be critical. There is not a minimum climb requirement in this configuration, only the determination of the climb or decent gradient. This information is provided to the pilot in the AFM (see § 23.1587) to allow the pilot to make informed judgments before takeoff.

No comments were received on the proposal for this section, and it is adopted as proposed.

#### *§ 23.67 Climb: One-Engine-Inoperative*

The FAA proposed to reorganize § 23.67 for harmonization with the JAR; to require WAT limits for some airplanes; to require wings level climb up to 400 feet for commuter category airplanes; and to make minor changes in airplane configuration requirements.

Revised § 23.67(a) specifies the climb requirements for non-WAT airplanes with no change in requirements for those airplanes.

Revised § 23.67(b) specifies climb requirements for WAT airplanes. WAT criteria are applied for both reciprocating engine-powered airplanes of more than 6,000 pounds maximum weight and turbine engine-powered airplanes. (See the discussion under § 23.45.) Turbine engine-powered airplanes have been subject to limited WAT limitations under § 23.67(c), which the FAA proposed to incorporate into § 23.67(b).

The FAA proposed to change the takeoff flap position for normal, utility, and acrobatic category reciprocating engine-powered airplanes of 6,000 pounds or less to “wing flaps retracted” from “most favorable position” (§ 23.67(a)(4)). Wing flaps retracted is the position most used in certification and in service for this size of airplane (see new § 23.67(a)(1)(iv) and (a)(2)(iv)).

The FAA proposed to remove § 23.67(d) since all climb speeds (both all-engine and one-engine-inoperative) are scheduled and the determination of  $V_Y$  is no longer required.

The FAA proposed to redesignate § 23.67(e) for commuter category airplanes as § 23.67(c) with no change in requirements except that the takeoff climb with landing gear extended must be conducted with the landing gear doors open. This is a conservative approach offered by the JAA to specify a definite gear door configuration and to remove the requirement to determine performance during the transient condition of gear doors opening and closing. The FAA proposed to specify, in § 23.67(c)(1), that the first segment climb must be conducted with the wings level and to further specify that the climb speed for the segment must be  $V_2$  instead of the requirement for a range of speeds from  $V_{LOF}$  and whatever the applicant selects at gear retraction. Also, the FAA proposed, in § 23.67(c)(2), to require conducting the second segment climb with wings level, which is appropriate for operational scenarios.

The FAA proposed to revise § 23.67 by removing paragraph (e)(1) and by moving the requirements to § 23.67(c) and § 23.63 (a)(1) and (d).

In proposed § 23.67(c)(3), enroute climb, the FAA added a minimum climb speed to ensure an adequate margin above stall speed.

The FAA proposed to redesignate § 23.67(e)(3) as § 23.67(c)(4) and to remove the paragraph heading “Approach” and add “Discontinued approach” in its place. The FAA proposed to clarify, in new § 23.67(c)(4), that the climb gradients must be met at an altitude of 400 feet above the landing surface.

No comments were received on the proposals for this section, and they are adopted as proposed.

single-engine airplanes. The information is necessary for flight planning and to provide the pilot with information from which to make informed decisions.

No comments were received on the proposal for this section, and it is adopted as proposed.

#### *§ 23.73 Reference Landing Approach Speed*

The FAA proposed a new § 23.73 to define the reference landing approach speeds,  $V_{REF}$ . Establishing a definition for these speeds simplifies the use of  $V_{REF}$  in other portions of the rule. The  $V_{REF}$  speeds for the various category airplanes are established as not less than  $1.3 V_{SO}$ . Also, the established speeds consider the appropriate relationship to  $V_{MC}$  determined under § 23.149.

No comments were received on the proposal for this section, and it is adopted as proposed.

#### *§ 23.75 Landing Distance*

The FAA proposed to revise the heading, reorganize § 23.75 for harmonization with the JAR, add the landing reference speed,  $V_{REF}$ , and move the portion on brake pressure to § 23.735, Brakes.

The FAA proposed to remove the reference to the AFM from the introductory paragraph. Part 23, subpart B, is generally used to specify flight test requirements, and part 23, subpart G, is generally used to specify the AFM requirements. The FAA also proposed to revise the introductory paragraph to require landing distances to be determined at standard temperature for each weight and altitude. Service experience has shown that landing distances are not sensitive to temperatures. The use of standard temperature is consistent with WAT requirements. The FAA proposed to remove from the introductory paragraph the reference to “approximately 3 knots” for seaplanes and amphibians because this information is considered advisory material on acceptable methods of compliance.

The FAA proposed to revise § 23.75(a) to add  $V_{REF}$  and to require its use. (See § 23.73.)

The FAA proposed to remove § 23.75(b) because § 23.45 specifies these general requirements. New § 23.75(b) clarifies that a constant configuration must be maintained throughout the maneuver.

The FAA proposed to revise § 23.75(d) by adding the requirement to specify the weight that must be considered for the transition to the balked landing conditions. This requirement reflects current industry practice.

The FAA proposed new § 23.75(e) as a general requirement to ensure the reliability of the brakes and tires.

The FAA proposed to revise § 23.75(f) to remove the first use of the word “means” and to add the phrase “retardation means” in its place, and to remove paragraph (f)(3). Paragraph (f)(3) required that no more than average skill shall be required to control the airplane. This topic is covered in § 23.45(f).

The FAA proposed to remove § 23.75(h) because the introductory paragraph of § 23.75 contains commuter category requirements and § 23.1587 requires landing distance correction factors.

No comments were received on the proposals for this section, and they are adopted as proposed.

#### *§ 23.77 Balked Landing*

The FAA proposed to revise this section to include additional WAT requirements and to make editorial changes.

The proposed revisions to § 23.77(a) and (b) differentiate between WAT and non-WAT. (See § 23.45.) Section 23.77(a)(4) adds a new climb speed requirement to ensure that acceleration is not necessary during the transition from landing to balked landing. The climb gradient of § 23.77(b) was selected to be slightly less than the non-WAT airplane sea level requirement in exchange for a balked landing climb capability at all altitudes and temperatures.

The JAA and FAA decided, during FAA/JAA Harmonization meetings, that the term “go-around” included the all engine balked landings of § 23.77, various all engine and one-engine-inoperative aborted landings specified in the AFM, and the commuter category discontinued approach of § 23.67(c)(4). Balked landing refers only to the all engine balked landing of § 23.77.

The FAA proposed to revise the two-hand roll force in the table of paragraph (c) from 60 to 50 pounds, to be consistent with JAR 25. The FAA also proposed to revise the table to show a one-hand on the rim roll force of 25 pounds. This is an FAA/JAA harmonized value.

*Comment:* Raytheon Aircraft Company comments that the control force limits table is specifically tied to the flight phases of paragraph (a) and that this “could be interpreted as providing an upper limit of maneuvering force (stick force per g) such that all normal operational maneuvers would have to be performed within a pitch force limit of 75 lbs (wheel, two hands), for unspecified normal acceleration limits.”

Raytheon states that this has not been previous policy and could become a costly requirement for larger part 23 aircraft with large cg ranges, “if substantial normal acceleration excursions are considered ‘normal’ maneuvering.” Raytheon recommends “that either the normal acceleration excursions be defined for normal, utility, acrobatic, and commuter categories or the explicit tie to the flight phases in this rule be deleted.”

*FAA Response:* Raytheon’s concern is whether “normal acceleration excursions are considered ‘normal’ maneuvering.” They are not.

Section 23.143 has historically been titled “General” and has always been considered broad enough to cover controllability and maneuverability in general. The inclusion of “all flight phases” is considered clarifying, and Raytheon’s concern that the concept of normal being expanded is unwarranted. Adopting this proposal would not change current certification practice.

The proposals are adopted as proposed.

#### *§ 23.145 Longitudinal Control*

The FAA proposed to revise § 23.145 to change the speed ranges applicable to the takeoff, enroute, and landing configurations.

Editorial changes were also proposed for the introductory text of paragraph (b) with no substantive change.

The FAA proposed in paragraph (b)(2) to change the requirement from “attaining and maintaining, as a minimum, the speed used to show compliance with § 23.77” to “allow the airspeed to transition from 1.3  $V_{SO}$  to 1.3  $V_{S1}$ .”

The FAA also proposed to redesignate paragraphs (b)(2) (i) and (ii) as (b)(2) and (b)(3), respectively, and in paragraph (b)(3) to add more specific requirements if gated flap positions are used.

The FAA proposed to change the speed reference from 1.4  $V_{SO}$  to  $V_{REF}$  for landing configuration in paragraph (b)(5). The FAA also proposed in paragraph (b)(5) to allow a two-handed control force since use of two hands is considered appropriate for a power off condition because the pilot does not need to change power settings.

Proposed paragraph (b)(6) is the same as former paragraph (b)(3).

In paragraph (c), the FAA proposed to change the speed range for maneuvering capability from “above  $V_{MO}/M_{MO}$  and up to  $V_D/M_D$ ” to “above  $V_{MO}/M_{MO}$  and up to the maximum speed shown under § 23.251.” This change is considered necessary because a range of speeds can be chosen as  $V_D/M_D$ , and reference to § 23.251 ensures a flight demonstrated speed instead of a design speed.



In proposed § 23.147(b), the FAA proposed to add requirements for multiengine airplanes that, during an enroute climb, when an engine fails the airplane maintains a minimum standard of controllability after allowing for a pilot action delay of two seconds. This proposed change tests for a likely operational scenario and is intended to ensure satisfactory controllability.

In § 23.147(c), the FAA proposed to test for the failure or disconnection of the primary lateral control. This paragraph requires that the airplane exhibit adequate dihedral effect throughout the airplane's operational envelope to ensure continued safe flight and landings if a lateral control disconnects. In addition, this requirement complements the relaxed requirements of proposed § 23.177(b) (see proposal for § 23.177).

*Comment:* Raytheon comments that there is no basis provided for the new rules proposed in § 23.147(b) and (c). Raytheon states that the "two second delay and the 45 degree bank appear to be arbitrary choices" and that there "is no comparable FAR requirement."

*FAA Response:* The values of 2 seconds and 45 degrees in proposed paragraph (b) were determined from § 23.367, "Unsymmetrical loads due to engine failure," which contains a 2 second delay for pilot corrective action. Historically, the 2 second delay and the 45 degree bank angle correlate to a similar requirement used for years by the United Kingdom CAA.

Proposed paragraph (c), failure of the lateral control, is part of a reduction in the overall lateral stability requirements. In Amendment 23-45, the FAA reduced the power requirements for § 23.177(a) in the landing configuration from 75 percent maximum continuous power to the power required to maintain a three degree angle of descent. The § 23.177 requirement essentially demonstrated that the airplane had the wing dihedral effect and rudder control power to raise a low (banked) wing using rudder only. Prior to this amendment, many manufacturers had to install an aileron/rudder interconnect to meet this requirement because of the high power setting. An aileron/rudder interconnect is a mechanism that ties the two controls together such that when one control surface deflects, the other will also deflect. In the case of § 23.177, the pilot uses the rudder, which also deflects the aileron and raises the wing to level. The underlying intent of this rule is to demonstrate that the airplane is controllable after an aileron control failure, similar to the elevator control failure demonstration currently in the requirements. This change, in conjunction with Amendment 23-45, will allow manufacturers to eliminate the need for the aileron/rudder interconnect.

The proposals are adopted as proposed.

#### *§ 23.149 Minimum Control Speed*

The FAA proposed to clarify § 23.149, to add a  $V_{MC}$  in the landing configuration, and to provide the procedure for determining a ground  $V_{MC}$ .

The FAA proposed to clarify § 23.149(a), with no requirement change. The FAA also proposed to clarify § 23.149(b) and to remove the reference to lesser weights in paragraph (b)(4) because the range of weights is covered in § 23.21.

The FAA proposed to revise § 23.149(c) to specify the requirements for a  $V_{MC}$  in the landing configuration for all WAT airplanes. This requirement is necessary for WAT airplanes to provide a  $V_{REF}$  margin above the  $V_{MC}$  determined in the landing configuration. (See proposal for § 23.73.)

The FAA proposed a new § 23.149(f) to contain requirements to determine a  $V_{MCG}$  for commuter category airplanes that could, at the option of the applicant, be used to comply with § 23.51. (See § 23.51.)

The only comment came from the JAA, which addressed a known disharmony,  $V_{SSE}$ , from a previous rule change.

The proposals are adopted as proposed.

The FAA proposed to revise § 23.155(b) to specify the maximum continuous power for the test required by this section instead of allowing a power selected by the applicant as an operating limitation. This revision eliminates an unnecessary power specification and simplifies normal operations for the pilot.

The FAA proposed to revise § 23.155(c) to address stick force gradient to ensure that stick force lightening is not excessive. As stated in the preamble to Notice 94-22, the FAA will issue advisory material on acceptable methods of compliance.

*Comment:* Raytheon states that proposed paragraph (c) adds a new requirement that there must not be an "excessive decrease" in the gradient of the stick force per g with increasing load factor. Raytheon's concern is that this is a very loosely defined requirement and that the allowable decrease in maneuvering stability may be a function of aircraft size and mission.

*FAA Response:* The FAA agrees that every airplane is different and that, therefore, each must be considered separately. The FAA does not agree that paragraph (c) is loosely defined. For many of the flight requirements, including "excessive decrease," the FAA must evaluate the individual airplanes to determine if the handling qualities are safe.

This proposal are adopted as proposed.

#### § 23.157 Rate of Roll

The FAA proposed to revise § 23.157(d) power and trim requirements and to clarify the flap position. In § 23.157(d)(1), the FAA proposed to clarify that the flaps should be in the landing position and § 23.157(d)(3) makes the power consistent with the approach configuration, which is the configuration being tested. The FAA proposed in § 23.157(d)(4) to relate the trim speed to  $V_{REF}$ . (See amendment for § 23.73.)

No comments were received on the proposals for this section, and they are adopted as proposed.

#### § 23.161 Trim

The FAA proposed to revise § 23.161 power, configurations, and speeds.

The FAA proposed to revise § 23.161(a) to state the safety principles underlying the trim requirements and to provide a regulatory requirement for considering conditions that might be encountered outside the requirements addressed in paragraphs (b) through (d).

The FAA proposed to revise § 23.161(b)(1) to add a requirement to trim at  $M_{MO}$  in addition to  $V_{MO}$  to clarify that the airplane must trim in the Mach limited speed range.

The FAA proposed to revise § 23.161(b)(2) to require lateral and directional trim over a range of  $1.4 V_{S1}$  to  $V_H$  or  $V_{MO}/M_{MO}$  for commuter category airplanes instead of only the high speed requirement in the present rules.

The FAA proposed, in the introductory paragraph of § 23.161(c), to remove the reference to  $V_{MO}/M_{MO}$  because it is covered in the applicable individual sections. In § 23.161(c)(1), the FAA proposed to require trim at takeoff power, as this is a likely operational scenario for most airplanes and the condition should be tested. In addition, the change relates the maximum continuous power climb speeds and configuration to § 23.69, the enroute climb requirement. The FAA proposed to redesignate § 23.161(c)(2) as § 23.161(c)(4), to change the reference  $V_{REF}$  for a landing speed, and to add a requirement for the airplane to trim at the steepest landing approach gradient the applicant chooses under § 23.75. The FAA proposed to redesignate § 23.161(c)(3) as § 23.161(c)(2) with editorial changes and to redesignate § 23.161(c)(4) as § 23.161(c)(3) with an increase in the trim speed from  $0.9 V_{NO}$  or  $V_{MO}$  to  $V_{NO}$  or  $V_{MO}/M_{MO}$ . The increase in trim speed is appropriate because descent is permitted and is common at  $V_{MO}$ .

No comments were received on the proposals for this section, and they are adopted as proposed.

#### *§ 23.175 Demonstration of Static Longitudinal Stability*

The FAA proposed to revise § 23.175(a)(1) to change the flap position from the climb position to the flaps retracted position. This is a clarifying change since virtually all part 23 airplanes use the flaps retracted position for climb. Also, this change aligns the part 23 and part 25 climb static longitudinal stability requirements.

The FAA proposed, in § 23.175(a)(3), to remove the option for the applicant to select some power other than maximum continuous power as an operating limitation. As noted in the discussion of § 23.155, this eliminates a power specification that is unnecessary and simplifies normal operations for the pilot. In § 23.175(a)(4), the FAA proposed to make the trim speed consistent with the enroute all-engine climb speed.

The FAA proposed in § 23.175(b) to rearrange the paragraph with no change in requirements. The definition of  $V_{FC}/M_{MC}$  contained in § 23.175(b)(2) is moved to part 1, to harmonize with JAR 1. (See the change to § 1.1.)

The FAA proposed to remove § 23.175(c). The test for gear down cruise static longitudinal stability required under paragraph (c) is considered superfluous to the landing configuration static longitudinal stability test and does not represent a likely operating scenario.

The FAA proposed to redesignate § 23.175(d) as § 23.175(c) with a change to  $V_{REF}$  as the trim speed.

No comments were received on the proposals for this section, and they are adopted as proposed.

#### *§ 23.177 Static Directional and Lateral Stability*

The FAA proposed to revise § 23.177 to remove the requirements for two-control airplanes, to make minor clarifying changes, and to specify an exclusion for acrobatic category airplanes.

The FAA proposed in § 23.177 to remove the introductory phrase concerning three-control airplanes, which is consistent with the removal of the requirements for two-control airplanes in paragraph (b). The two-control airplane regulations were introduced in 1945 but no two-control airplanes have been certificated for several decades and no need is foreseen for these regulations. If an applicant proposes a two-control airplane, the FAA would issue special conditions.

The FAA proposed that, after removing the introductory portion of § 23.177(a), paragraph (a)(1) would be redesignated as (a). In the first sentence, “skid” is replaced with “wings level sideslip” to clarify the intended maneuver. Also, this change increases the power requirement for demonstration of directional stability in the landing configuration. The requirement specifies power necessary to maintain a three degree angle of descent. Maximum continuous power is considered appropriate since directional stability should be maintained during a balked landing, particularly since directional instability is an undesirable characteristic at any point in the flight envelope. Also, the FAA proposed to replace  $V_A$  with  $V_O$  to be consistent with § 23.1507.

The FAA proposed, in § 23.177(b), to replace “any” with “all” in the first sentence to clarify that all landing gear and flap positions must be addressed. Also, the FAA proposed that the paragraph specify a minimum speed at which static lateral stability may not be negative, as  $1.3 V_S$ , for all configurations except takeoff. This is consistent with the other speeds specified in § 23.177(b) and relieves the requirement for other than takeoff speeds.

The FAA proposed new § 23.177(c) to provide an exclusion for the dihedral effect for acrobatic category airplanes approved for inverted flight. This change recognizes that, in full acrobatic airplanes, the dihedral effect is not a desired characteristic

FAA Response: As Raytheon noted, the rule language they believe needs clarification was not addressed in Notice 94-22, and, therefore, is beyond the scope of this rulemaking.

The proposals are adopted as proposed.

#### *§ 23.201 Wings Level Stall*

The FAA proposed to remove the two-control airplane requirements, altitude loss requirements, and to make clarifying changes in § 23.201.

The FAA proposed to revise § 23.201(a) to remove the applicability reference for an airplane with independently controlled roll and directional controls and to replace the last word “pitches” with “stalls” since stalls may be defined by other than nose-down pitching.

The FAA proposed to remove § 23.201(b) since it applies to two-control airplanes. (See § 23.177 for discussion of two-control airplane requirements.)

The FAA proposed to divide § 23.201(c) into § 23.201(b), stall recognition, and § 23.201(c), stall recovery. The FAA proposed, in § 23.201(b), to clarify that the test should start from a speed at least 10 knots above the stall speed, with no change in requirements. The FAA proposed to add § 23.201(c) to specify how long the control must be held against the stop. This change ensures that the procedure for determining stall speed is the same procedure used to test stall characteristics. The FAA proposed to remove the last sentence of paragraph (c) on the increase of power because it only applies to altitude loss.

The FAA proposed to remove § 23.201(d), as suggested by the JAA, since the determination of altitude loss, and its subsequent furnishing in the AFM, is not considered information useful to the pilot for safe operation of the airplane.

The FAA proposed new § 23.201(d) based on present § 23.201(e), to clarify that the roll and yaw limits apply during both entry and recovery.

The FAA proposed new § 23.201(e) based on former paragraph (f) with some revisions. During FAA/JAA harmonization meetings, the JAA pointed out to the FAA that, in high power-to-weight ratio airplanes, extreme nose-up attitudes were the principal criteria for use of reduced power, not the presence of undesirable stall characteristics. The FAA concurs, and, therefore, proposed to remove the phrase concerning stall characteristics.

No comments were received on the proposals for this section, and they are adopted as proposed.

#### *§ 23.203 Turning Flight and Accelerated Turning Stalls*

The FAA proposed to revise § 23.203 to add the word “turning” before “stalls” and after “accelerated” in the heading, the introductory text, and in paragraphs (a)(2) and (b)(5). This change clarifies that accelerated stalls are performed in turning flight. This clarification reflects current practice.

In § 23.203(a) and (b), the FAA proposed to reference the stall definition in current § 23.201(b), which is more specific than the present general words “when the stall has fully developed or the elevator has reached its stop.”

For clarification, the FAA proposed that paragraph (b)(4) be separated into paragraphs (b)(4) and (b)(5) without substantive change, and that former paragraph (b)(5) be redesignated as paragraph (b)(6).

The FAA proposed in § 23.203(c)(1) to clarify the wing flap positions by changing “each intermediate position” to “each intermediate normal operating position,” and in § 23.203(c)(4) to clarify the use of reduced power. (See the final change to § 23.201(f).)

in a spin, even on airplanes that are certificated to the present requirements. Based on this service history, the FAA determined that the requirement for demonstrating one-engine-inoperative stalls is not effective in ensuring that inadvertent stalls with one-engine-inoperative will have satisfactory characteristics and be recoverable. Sufficient protection against the hazard of stalling with one-engine-inoperative is provided by the one-engine-inoperative performance requirements and operating speed margins, coupled with the requirements for determination of  $V_{MC}$ , and the addition of a directional and lateral control test under § 23.147(b).

No comments were received on the proposal for this section, and the section is removed as proposed.

#### *§ 23.207 Stall Warning*

The FAA proposed, in § 23.207(c), to reference the stall tests required by § 23.201(b) and § 23.203(a)(1) and to specify that during such tests for one knot per second deceleration stalls, both wings level and turning, the stall warning must begin at a speed exceeding the stalling speed by a margin of not less than 5 knots. The FAA proposed to remove the quantified upper limit in the rule of 10 knots or 15 percent of the stalling speed. The upper limit has created problems for manufacturers because of the complex design features required to show compliance. The upper limit requirement is, in effect, replaced by the nuisance stall warning provision in § 23.207(d).

The FAA proposed to divide § 23.207(d) into § 23.207 (d) and (e), with § 23.207(d) on nuisance stall warnings having no change in requirements. In § 23.207(e), the FAA proposed to remove the bottom limit of five knots for decelerations greater than one knot per second and to specify that the stall warning must begin sufficiently before the stall so that the pilot can take corrective action. This is considered appropriate because, at the higher deceleration rates of three to five knots per second, a specified five knots may not be enough stall warning.

The FAA proposed new § 23.207(f) to allow for a mutable stall warning system in acrobatic category airplanes, with automatic arming for takeoff and rearming for landing. This feature allows the pilot to disengage the warning during acrobatics while retaining the safety feature during takeoff and landing.

No comments were received on the proposals for this section, and they are adopted as proposed.

#### *§ 23.221 Spinning*

The FAA proposed to change the point to start the one-turn-spin recovery count, to delete the "characteristically incapable of spinning" option, and to make minor changes in acrobatic category spins in § 23.221.

The FAA proposed, in § 23.221(a), to replace the exception for airplanes characteristically incapable of spinning with an exception for airplanes that demonstrate compliance with the optional spin resistant requirements of paragraph (a)(2) of this section. Criteria for an airplane incapable of spinning are unnecessary since criteria for spin resistant airplanes are provided. As proposed, § 23.221(a) changed the point at which the count for the one-turn-spin recovery begins. The change provides a specific point to begin the count by replacing the phrase "after the controls have been applied" with "after initiation of the first control action for recovery." Under the former rules, if an applicant proposed a multiple step recovery procedure that starts with the rudder, then the airplane may be effectively recovered before the start of the recovery count.

The FAA proposed, in § 23.221(a)(1)(ii), to specify that no control force or characteristic can adversely affect prompt recovery. This would be an improvement over the present requirement because it includes yaw and roll as well as pitch control.

The FAA proposed to recodify § 23.221(a)(1) into § 23.221(a)(1)(i) through (a)(1)(iv) with no changes in the requirements, and to restate § 23.221(a)(2) on spin resistant airplanes with minor editorial changes but with no change in requirements.

for spin recovery after six turns or any greater number of turns for which certification is requested. This rule requires recovery within 1.5 turns after initiation of the first control action for recovery. This requirement ensures recovery within 1.5 turns if the spin mode changes beyond six turns. As an alternative, the applicant may stop at six turns and provide a limitation of six turns.

The FAA proposed, in § 23.221(c)(2), to remove the option to retract flaps during recovery and to provide the applicant with a choice of flaps up or flaps deployed for spin approval. The paragraph continues to prohibit exceeding applicable airspeed limits and limit maneuvering load factors.

The FAA proposed new § 23.221(c)(4) to ensure that the acrobatic spins do not cause pilot incapacitation.

The FAA proposed to remove § 23.221(d), relating to airplanes that are “characteristically incapable of spinning,” which has been in the regulation since at least 1937. In 1942, the present weight, center of gravity, and control mis-rig criteria were introduced into Civil Air Regulation (CAR) 03. Since then, the National Aeronautics and Space Administration (NASA) spin resistant requirements, which are based on research, have been developed and incorporated in the regulations by Amendment No. 23-42 (56 FR 344, January 3, 1991). If an applicant proposes a non-spinable airplane, it would be appropriate to apply the requirements of § 23.221(a)(2) as proposed in Notice 90-22.

The only comment on this section was a JAA statement recognizing this as an existing disharmony.

The proposals are adopted as proposed.

#### *§ 23.233 Directional Stability and Control*

The FAA proposed to make minor word changes to § 23.233(a) to harmonize this section with the corresponding JAR section.

No comments were received on the proposal for this section, and it is adopted as proposed.

#### *§ 23.235 Operation on Unpaved Surfaces*

The FAA proposed to revise the heading of § 23.235 and to remove water operating requirements, which are moved to new § 23.237.

No comments were received on the proposals for this section, and it is adopted as proposed.

#### *§ 23.237 Operation on Water*

New § 23.237, for operation on water, is the same as the former § 23.235(b).

The only comment on this section is a JAA statement acknowledging an existing disharmony.

The proposal is adopted as proposed.

#### *§ 23.253 High Speed Characteristics*

The FAA proposed to remove paragraph (b)(1), since the requirement for piloting strength and skill is covered in § 23.141.

No comments were received on the proposal for this section, and it is adopted as proposed.

#### *§ 23.562 Emergency Landing Dynamic Conditions*

The FAA proposed to change the one-engine-inoperative climb to remove the reference in § 23.562(d) and to add it to § 23.67(a)(1).

The only comment on this section is a JAA statement acknowledging existing disharmony.

The proposal is adopted as proposed.

No comments were received on the proposal for this section, and it is adopted as proposed.

#### *§ 23.1521 Powerplant Limitations*

The FAA proposed to amend § 23.1521 to require maximum temperature be established for takeoff operation and to require an ambient temperature limit for reciprocating engines in airplanes of more than 6,000 pounds.

The FAA proposed in § 23.1521(b)(5) to require the establishment of maximum cylinder head, liquid coolant, and oil temperature limits for takeoff operation without regard to the allowable time. Previously, temperature limits were required only if the takeoff power operation is permitted for more than two minutes. It is appropriate to require operating temperature limitations because most takeoff operations will exceed two minutes.

The FAA proposed in § 23.1521(e) to require an ambient temperature limit for turbine engine-powered airplanes and reciprocating engine-powered airplanes over 6,000 pounds. These airplanes are subject to WAT limits and the revision will ensure that airplane engines will cool at the ambient temperature limit.

No comments were received on the proposals for this section, and they are adopted as proposed.

#### *§ 23.1543 Instrument Markings: General*

The FAA proposed new § 23.1543(c) to require that all related instruments be calibrated in compatible units. This is considered essential for safe operation.

No comments were received on the proposal for this section, and it is adopted as proposed.

#### *§ 23.1545 Airspeed Indicator*

The FAA proposed in § 23.1545(b)(5) to delete any one-engine-inoperative best rate of climb speed marking requirements for WAT limited airplanes. These airplanes already have scheduled speeds in case of an engine failure. The FAA proposed that paragraph (b)(5) apply only to non-WAT airplanes for which the one-engine-operative best rate of climb speed marking has been simplified to reflect performance for sea level at maximum weight. Since the blue arc rule was promulgated in Amendment No. 23-23 (43 FR 50593, October 30, 1978), certification experience has shown that the marking of an arc is unnecessarily complicated. For many airplanes, the approved arc was so narrow that the arc was a line; therefore, final paragraph (b)(5) requires a blue radial line instead of an arc.

The FAA proposed to revise § 23.1545(b)(6) to retain the existing  $V_{MC}$  requirement for non-WAT airplanes and to remove the requirement for  $V_{MC}$  markings for WAT airplanes since WAT airplanes already have scheduled speeds in case of engine failure.

No comments were received on the proposals for this section, and they are adopted as proposed.

#### *§ 23.1553 Fuel Quantity Indicator*

The FAA proposed to remove, from § 23.1553, the use of an arc to show a quantity of unusable fuel. The FAA proposed that the rule reference the unusable fuel determination and require only a red radial line, which provides a clearer indication of fuel quantity for pilots.

No comments were received on the proposal for this section, and it is adopted as proposed.

#### *§ 23.1555 Control Markings*

The FAA proposed to add to § 23.1555(e)(2) a requirement that no controls except emergency controls be red.

The proposal is adopted with the changes mentioned above.

#### *§ 23.1559 Operating Limitations Placard*

The FAA proposed to simplify § 23.1559 and to remove duplicate material while requiring essentially the same information. Most airplanes currently operate with an AFM and the new rule places emphasis on using the AFM to define required operating limitations.

No comments were received on the proposal for this section, and it is adopted as proposed.

#### *§ 23.1563 Airspeed Placards*

The FAA proposed to add a new paragraph (c) to § 23.1563. The new paragraph is applicable to WAT limited airplanes and requires providing the maximum  $V_{MC}$  in the takeoff configuration determined under § 23.149(b). This is desirable since the  $V_{MC}$  is not marked on the airspeed indicator for these airplanes.

No comments were received on the proposal for this section, and it is adopted as proposed.

#### *§ 23.1567 Flight Maneuver Placard*

The FAA proposed to add new § 23.1567(d) to apply to acrobatic and utility airplanes approved for intentional spinning, which requires a placard listing control actions for recovery. New paragraph (d) proposed to require a statement on the placard that the airplane be recovered when spiral characteristics occur, or after six turns, or at any greater number of turns for which certification tests have been conducted. This paragraph replaces the similar placard requirement in current § 23.1583(e)(3) for acrobatic category airplanes.

No comments were received on the proposal for this section, and it is adopted as proposed.

#### *§ 23.1581 General*

The FAA proposed to make editorial changes in § 23.1581 that recognize WAT limited and non-WAT limited airplanes.

In new § 23.1581(a)(3), the FAA proposed to require information necessary to comply with relevant operating rules. This is a FAR and JAR harmonization item and is considered necessary because some operational rules, such as § 135.391, require flight planning with one-engine-inoperative cruise speed and/or driftdown data. For airplanes operated under part 135 in the United States, it represents no change in requirements.

The FAA proposed § 23.1581(b)(2) to require that only WAT limited airplane AFM's provide data necessary for determining WAT limits.

The FAA proposed new § 23.1581(c) to require the AFM units to be the same as on the instruments.

The FAA proposed new § 23.1581(d) to remove the requirement for a table of contents. This is considered a format requirement and is not appropriate for this section, which specifies AFM content. Section 23.1581(d) is replaced by a requirement to present all operational airspeeds as indicated airspeeds. This adopts current practice.

No comments were received on the proposals for this section, and they are adopted as proposed.

#### *§ 23.1583 Operating Limitations*

The FAA proposed to revise § 23.1583 operating limitations information for the AFM. The FAA proposed to revise airspeed limitations for commuter category airplanes, to require AFM limitations for WAT limited airplanes, to furnish ambient temperature limitations and smoking restriction information, and to specify types of runway surfaces.



within the range selected by the applicant at which the accelerate-stop distance determined under § 23.153 is equal to the available runway length plus the length of any stopway, if available. This is currently required for transport category airplanes and is necessary for harmonization with JAR 23.

In new § 23.1583(c)(6), the FAA proposed to establish the zero wing fuel weight of § 23.343 as a limitation. This provides the pilot with information necessary to prevent exceeding airplane structural limits.

The FAA proposed editorial changes to § 23.1583(d) and, in paragraphs (e)(1) and (e)(2), to remove references to “characteristically incapable of spinning.” As discussed under § 23.221, requirements for “characteristically incapable of spinning” are removed.

In § 23.1583(e)(4), the FAA proposed to add a requirement to specify limitations associated with spirals, six turn spins, or more than six turn spins. The requirement for a placard is removed since the requirement is covered in § 23.1567.

The FAA proposed to revise § 23.1583(e)(5) based on former paragraph (e)(4) for commuter category airplanes. This restates the maneuvers as those proposed for commuter category airplanes in § 23.3.

The FAA proposed to revise the heading of § 23.1583(f) and to add a limit negative load factor for acrobatic category airplanes.

The FAA proposed to revise § 23.1583(g) to make editorial changes with no change in requirements and to reference the flight crews’ requirements in § 23.1523. As proposed, § 23.1583(k), (l), and (m) are redesignated as § 23.1583(i), (j), and (k).

The FAA proposed new § 23.1583(l) to require baggage and cargo loading limits in the AFM.

The FAA proposed a new § 23.1583(m) to require any special limitations on systems and equipment in the AFM. This provides the pilot with information necessary for safe operation of the airplane systems and equipment.

The FAA proposed a new § 23.1583(n) to require a statement on ambient temperature limitations. Maximum cooling temperature limits have been required for turbine-powered airplanes by § 23.1521(e); however, the requirement for the limitation has never been specified in § 23.1583. Proposed § 23.1583(n) requires both maximum and minimum temperature limits if appropriate. A minimum temperature limit provides the pilot with information necessary to avoid airplane damage during low temperature operations.

The FAA proposed a new § 23.1583(o) to state any occupant smoking limitations on the airplane in the AFM.

The FAA proposed a new § 23.1583(p) to require the applicant to state what runway surfaces have been approved.

No comments were received on the proposals for this section, and it is adopted as proposed.

#### *§ 23.1585 Operating Procedures*

The FAA proposed to rearrange the material in § 23.1585(a). Also, the FAA proposed to add, for all airplanes, a requirement to paragraph (a) that information in the following areas be included: Unusual flight or ground handling characteristics; maximum demonstrated values of crosswinds; recommended speed for flight in rough air; restarting an engine in flight; and making a normal approach and landing in accordance with §§ 23.73 and 23.75. All of these requirements are in former § 23.1585(a) except for restarting a turbine engine in flight, which is in former paragraph (c)(5) pertaining only to multiengine airplanes. The FAA decided that a restart capability is not required for single reciprocating engine airplanes for the reasons given in the preamble discussion of proposal 3 in Amendment No. 23-43 (58 FR 18958, April 9, 1993). The requirement to provide restart information should apply to single turbine engines, however, since turbine engine designs incorporate a restart capability and inadvertent shutdowns may occur. The requirement for normal approach and landing information, in accordance with the landing

and continuing a climb following an engine failure, as proposed (e) for normal, utility, and acrobatic multiengines.

The FAA proposed to revise § 23.1585(d) to apply to normal, utility, and acrobatic airplanes, which would have to comply with paragraph (a) and either (b) or (c). These airplanes must also comply with the normal takeoff, climb, and abandoning a takeoff procedures, which were contained in paragraph (a).

The FAA proposed to revise § 23.1585(c), for normal, utility and acrobatic multiengine airplanes, to require compliance with proposed (a), (c), and (d), plus requirements for continuing a takeoff or climb with one-engine-inoperative that were in former paragraph (c) (1) and (2).

The FAA proposed to revise § 23.1585(f) to amend normal takeoff requirements in former paragraph (a)(2); to add accelerate-stop requirements; and to continue takeoff after engine failure, which was in former paragraph (c)(1).

The FAA proposed no substantial changes in § 23.1585(g) and (h), which are based on paragraphs (d) and (e), respectively.

The FAA proposed to revise § 23.1585(i) based on former paragraph (g) on the total quantity of usable fuel and to add information on the effect of pump failure on unusable fuel.

The FAA proposed a new § 23.1585(j) to require procedures for safe operation of the airplanes' systems and equipment that, although not previously required, are current industry practice.

In the proposed revision of § 23.1585(h), the commuter category airplane procedures for restarting turbine engines in flight would no longer be necessary because the requirement is covered under paragraph (a)(4).

*Comment:* The JAA comments that the JAA does not agree with limiting the inflight engine restart requirements of proposed paragraph (a)(4) to turbine engines only.

*FAA Response:* The JAA comment addresses a known disharmony between the regulations.

No substantive comment was received, and the proposals are adopted as proposed.

#### *§ 23.1587 Performance Information*

The FAA proposed to revise § 23.1587 to rearrange existing material, to remove ski plane performance exceptions, to remove the option of calculating approximate performance, to remove stall altitude loss data, and to require overweight landing performance in § 23.1587. Stalling speed requirements of paragraph (c)(2) and (3) are combined and moved to final paragraph (a)(1) and reference and stalling speed requirement of § 23.49. Information on the steady rate and gradient of climb with all engines operating is required by paragraph (a)(2). This is revised from paragraph (a)(2). The climb section referenced in existing § 23.1587(a)(2) is removed and replaced with § 23.69(a).

The FAA proposed to revise paragraph (a)(3) to add that landing distance determined under § 23.75 must be provided for each airport altitude, standard temperature, and type of surface for which it is valid. The FAA proposed to revise paragraph (a)(4) to require information on the effect on landing distance when landing on other than hard surface, as determined under § 23.45(g). The FAA proposed to revise paragraph (a)(5) to cover information on the effects on landing distance of runway slope and wind. This provides the pilot with data with which to account for these factors in his or her takeoff calculations.

The FAA proposed to remove requirements on ski planes from § 23.1587(b) and to add a requirement for a steady angle of climb/descent, as determined under § 23.77(a), in its place. This requirement applies to all non-WAT airplanes.

The FAA proposed to revise paragraph (c) to apply normal, utility, and acrobatic category airplanes, rather than all airplanes. The FAA proposed to remove the stall altitude loss requirements from paragraph

reciprocating engine-powered airplanes. It provides the pilot with the information determined under that § 23.66.

The FAA proposed a new paragraph (c)(5), which pertains to enroute rate and gradient and climb/descent determined under § 23.69(b), for multiengine airplanes.

The FAA proposed to revised § 23.1587(d) to incorporate into commuter category airplanes the present data and accelerate-stop data, overweight landing performance, and the effect of operation on other than smooth hard surfaces. In addition, in order to consolidate all of the requirements for what must appear in the AFM in subpart G, the FAA proposed that § 23.1587(d)(10) contain the requirement, found in former § 23.1323(d), to show the relationship between IAS and CAS in the AFM.

No comments were received on the proposals for this section, and they are adopted as proposed.

#### *§ 23.1589 Loading Information*

The FAA proposed to make editorial changes in § 23.1589(b) to simplify the text, with no change in requirements.

No comments were received on the proposal for this section, and it is adopted as proposed.

#### *Appendix E*

The FAA proposed to remove appendix E and to reserve it for the reasons given in the change to § 23.25.

No comments were received on the proposal, and appendix E is removed and reserved as proposed.

#### **Regulatory Evaluation, Regulatory Flexibility Determination, and Trade Impact Assessment**

Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs Federal agencies to promulgate new regulations only if the potential benefits to society justify its costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic impact of regulatory changes on small entities. Finally, the Office of Management and Budget directs agencies to assess the effects of regulatory changes on international trade. In conducting these assessments, the FAA has determined that this rule: (1) Will generate benefits exceeding its costs and is "significant" as defined in the Executive Order; (2) is "significant" as defined in DOT's Policies and Procedures; (3) will not have a significant impact on a substantial number of small entities; and (4) will not constitute a barrier to international trade. These analyses, available in the docket, are summarized below.

#### **Comments Related to the Economics of the Proposed Rule**

One comment was received regarding the economics, § 23.143 Controllability and Maneuverability. This comment, as well as the FAA's response, are included in the section "Discussion of Amendments."

#### **Regulatory Evaluation Summary**

The FAA has identified 15 sections that will result in additional compliance costs to one or more airplane categories. Amendments to five sections will result in cost savings. The greatest costs will be incurred by manufacturers of WAT limited airplanes (e.g., multiengine airplanes with maximum weights of more than 6,000 pounds). When amortized over a production run, the incremental costs will have a negligible impact on airplane prices, less than \$100 per airplane.

The primary benefit of the rule will be the cost efficiencies of harmonization with the JAR for those manufacturers that choose to market airplanes in JAA countries as well as to manufacturers in JAA countries that market airplanes in the United States. Other benefits of the rule will be decreased reliance on special conditions, simplification of the certification process through clarification of existing requirements, and increased flexibility through optional designs.

The rule will not constitute a barrier to international trade, including the export of American airplanes to foreign countries and the impact of foreign airplanes into the United States. Instead, the flight certification procedures have been harmonized with those of the JAA and will lessen restraints on trade.

#### **Federalism Implications**

The regulations herein will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

#### **Conclusion**

The FAA is revising the flight airworthiness standards for normal, utility, acrobatic, and commuter category airplanes to harmonize them with the standards of the Joint Aviation Authorities in Europe for the same category airplanes. The revisions will reduce the regulatory burden on the United States and European airplane manufacturers by relieving them of the need to show compliance with different standards each time they seek certification approval of an airplane in the United States or in a country that is a member of the JAA.

For the reasons discussed in the preamble, and based on the findings in the Regulatory Evaluation, the FAA has determined that this rule is significant under Executive Order 12866. In addition, the FAA certifies that this rule will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. This rule is considered significant under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). A regulatory evaluation of the rule has been placed in the docket. A copy may be obtained by contacting the person identified under "FOR FURTHER INFORMATION CONTACT."

#### **The Amendments**

In consideration of the foregoing, the Federal Aviation Administration amends 14 CFR parts 1 and 23 effective March 11, 1996.

The authority citation for part 1 continues to read as follows:

*Authority:* 49 U.S.C. 106(g), 40113, 44701.

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### § 1.1 General definitions.

As used in subchapters A through K of this chapter unless the context requires otherwise—

*Administrator* means the Federal Aviation Administrator or any person to whom he has delegated his authority in the matter concerned.

*Aerodynamic coefficients* means nondimensional coefficients for aerodynamic forces and moments.

*Air carrier* means a person who undertakes directly by lease, or other arrangement, to engage in air transportation.

*Air commerce* means interstate, overseas, or foreign air commerce or the transportation of mail by aircraft or any operation or navigation of aircraft within the limits of any Federal airway or any operation or navigation of aircraft when directly affects, or which may endanger safety in, interstate, overseas, or foreign air commerce.

*Aircraft* means a device that is used or intended to be used for flight in the air.

*Aircraft engine* means an engine that is used or intended to be used for propelling aircraft. It includes turbosuperchargers, appurtenances, and accessories necessary for its functioning, but does not include propellers.

*Airframe* means the fuselage, booms, nacelles, cowlings, fairings, airfoil surfaces (including rotors but excluding propellers and rotating airfoils of engines), and landing gear of an aircraft and their accessories and controls.

*Airplane* means an engine-driven fixed-wing aircraft heavier than air, that is supported in flight by the dynamic reaction of the air against its wings.

*Airport* means an area of land or water that is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities, if any.

*Airship* means an engine-driven lighter-than-air aircraft that can be steered.

*Air traffic* means aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

*Air traffic clearance* means an authorization by air traffic control, for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specified traffic conditions within controlled airspace.

*Air traffic control* means a service operated by appropriate authority to promote the safe, orderly, and expeditious flow of air traffic.

*Air transportation* means interstate, overseas, or foreign air transportation or the transportation of mail by aircraft.

[*Alert area* means an area that is established to inform pilots of a specific area wherein a high volume of pilot training or an unusual type of aeronautical activity is conducted.]

*Alternate airport* means an airport at which an aircraft may land if a landing at the intended airport becomes inadvisable.

*Altitude engine* means a reciprocating aircraft engine having a rated takeoff power that is producible from sea level to an established higher altitude.

*Appliance* means any instrument, mechanism, equipment, part, apparatus, appurtenance, or accessory, including communications equipment, that is used or intended to be used in operating or controlling an aircraft in flight, is installed in or attached to the aircraft, and is not part of an airframe, engine, or propeller.

*Approved*, unless used with reference to another person, means approved by the Administrator.

*Area navigation (RNAV)* means a method of navigation that permits aircraft operations on any desired course within the coverage of station-referenced navigation signals or within the limits of self-contained system capability.

*Area navigation low route* means an area navigation route within the airspace extending upward from 1,200 feet above the surface of the earth to, but not including, 18,000 feet MSL.

*Area navigation high route* means an area navigation route within the airspace extending upward from, and including, 18,000 feet MSL to flight level 450.

*Armed Forces* means the Army, Navy, Air Force, Marine Corps, and Coast Guard, including their

one or more of its three principal axes.

*Balloon* means a lighter-than-air aircraft that is not engine driven.

*Brake horsepower* means the power delivered at the propeller shaft (main drive or main output) of an aircraft engine.

*Calibrated airspeed* means indicated airspeed of an aircraft, corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level.

*Canard* means the forward wing of a canard configuration and may be a fixed, movable, or variable geometry surface, with or without control surfaces.

*Canard configuration* means a configuration in which the span of the forward wing is substantially less than that of the main wing.

*Category—*

(1) As used with respect to the certification, ratings, privileges, and limitations of airmen, means a broad classification of aircraft. Examples include: airplane; rotorcraft; glider; and lighter-than-air; and

(2) As used with respect to the certification of aircraft, means a grouping of aircraft based upon intended use of operating limitations. Examples include: transport, normal, utility, acrobatic, limited, restricted, and provisional.

*Category A*, with respect to transport category rotorcraft, means multiengine rotorcraft designed with engine and system isolation features specified in part 29 and utilizing scheduled takeoff and landing operations under a critical engine failure concept which assures adequate designated surface area and adequate performance capability for continued safe flight in the event of engine failure.

*Category B*, with respect to transport category rotorcraft, means single-engine or multiengine rotorcraft which do not fully meet all Category A standards. Category B rotorcraft have no guaranteed stay-up ability in the event of engine failure and unscheduled landing is assumed.

*Category II operations*, with respect to the operation of aircraft, means a straight-in ILS approach to the runway of an airport under a Category II

ceiling of the lowest layer of clouds or obscuring phenomena that is reported as *broken*, *overcast*, or *obscuration*, and not classified as *thin* or *partial*.

*Civil aircraft* means aircraft other than public aircraft.

*Class—*

(1) As used with respect to the certification, ratings, privileges, and limitations of airmen, means a classification of aircraft within a category having similar operating characteristics. Examples include: single engine; multiengine; land; water; gyroplane; helicopter; airship; and free balloon; and

(2) As used with respect to the certification of aircraft, means a broad grouping of aircraft having similar characteristics of propulsion, flight, or landing. Examples include: airplane; rotorcraft; glider; balloon; landplane; and seaplane.

*Clearway* means—

(1) For turbine engine powered airplanes certificated after August 29, 1959, an area beyond the runway, not less than 500 feet wide, centrally located about the extended centerline of the runway, and under the control of the airport authorities. The clearway is expressed in terms of a clearway plane, extending from the end of the runway with an upward slope not exceeding 1.25 percent, above which no object nor any terrain protrudes. However, threshold lights may protrude above the plane if their height above the runway is 26 inches or less and if they are located to each side of the runway.

(2) For turbine engine powered airplanes certificated after September 30, 1958, but before August 30, 1959, an area beyond the takeoff runway extending no less than 300 feet on either side of the extended centerline of the runway, at an elevation no higher than the elevation of the end of the runway, clear of all fixed obstacles, and under the control of the airport authorities.

*Climbout speed*, with respect to rotorcraft, means a referenced airspeed which results in a flight path clear of the height-velocity envelope during initial climbout.

other business or is, in itself, a major enterprise for profit.

*Controlled airspace* means an airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.

NOTE: Controlled airspace is a generic term that covers Class A, Class B, Class C, Class D, and Class E airspace.

【*Controlled firing area* means an area that is established to contain activities, which if not conducted in a controlled environment, would be hazardous to nonparticipating aircraft.】

*Crewmember* means a person assigned to perform duty in an aircraft during flight time.

*Critical altitude* means the maximum altitude at which, in standard atmosphere, it is possible to maintain, at a specified rotational speed, a specified power or a specified manifold pressure. Unless otherwise stated, the critical altitude is the maximum altitude at which it is possible to maintain, at the maximum continuous rotational speed, one of the following—

(1) The maximum continuous power, in the case of engines for which this power rating is the same at sea level and at the rated altitude.

(2) The maximum continuous rated manifold pressure, in the case of engines the maximum continuous power of which, is governed by a constant manifold pressure.

*Critical engine* means the engine whose failure would most adversely affect the performance or handling qualities of an aircraft.

*Decision height*, with respect to the operation of aircraft, means the height at which a decision must be made, during an ILS or PAR instrument approach, to either continue the approach or to execute a missed approach.

*Equivalent airspeed* means the calibrated airspeed of an aircraft corrected for adiabatic compressible flow for the particular altitude. Equivalent airspeed is equal to calibrated airspeed in standard atmosphere at sea level.

*Extended over-water operation* means—

(1) With respect to aircraft other than helicopters, and operation over water at a horizontal

extends, outside of the aircraft fuselage.

*External-load attaching means* means the structural components used to attach an external load to an aircraft, including external-load containers, the backup structure at the attachment points, and any quick-release device used to jettison the external load.

*Fireproof*—

(1) With respect to materials and parts used to confine fire in a designated fire zone, means the capacity to withstand at least as well as steel in dimensions appropriate for the purpose for which they are used, the heat produced when there is a severe fire of extended duration in that zone; and

(2) With respect to other materials and parts, means the capacity to withstand the heat associated with fire at least as well as steel in dimensions appropriate for the purpose for which they are used.

*Fire resistant*—

(1) With respect to sheet or structural members means the capacity to withstand the heat associated with fire at least as well as aluminum alloy in dimensions appropriate for the purpose for which they are used; and

(2) With respect to fluid-carrying lines, fluid system parts, wiring, air ducts, fittings, and powerplant controls, means the capacity to perform the intended functions under the heat and other conditions likely to occur when there is a fire at the place concerned.

*Flame resistant* means not susceptible to combustion to the point of propagating a flame, beyond safe limits, after the ignition source is removed.

*Flammable*, with respect to a fluid or gas, means susceptible to igniting readily or to exploding.

*Flap extended speed* means the highest speed permissible with wing flaps in a prescribed extended position.

*Flash resistant* means not susceptible to burning violently when ignited.

*Flight crewmember* means a pilot, flight engineer, or flight navigator assigned to duty in an aircraft during flight time.

to the intended flight of an aircraft, that is filed orally or in writing with air traffic control.

*Flight time* means the time from the moment the aircraft first moves under its own power for the purpose of flight until the moment it comes to rest at the next point of landing. (*Block-to-block time*.)

*Flight visibility* means the average forward horizontal distance, from the cockpit of an aircraft in flight, at which prominent unlighted objects may be seen and identified by day and prominent lighted objects may be seen and identified by night.

*Foreign air carrier* means any person other than a citizen of the United States, who undertakes directly, by lease or other arrangement, to engage in air transportation.

*Foreign air commerce* means the carriage by aircraft of persons or property for compensation or hire, or the carriage of mail by aircraft, or the operation or navigation of aircraft in the conduct or furtherance of a business or vocation, in commerce between a place in the United States and any place outside thereof; whether such commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.

*Foreign air transportation* means the carriage by aircraft of persons or property as a common carrier for compensation or hire, or the carriage of mail by aircraft, in commerce between a place in the United States and any place outside of the United States, whether that commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.

*Forward wing* means a forward lifting surface of a canard configuration or tandem-wing configuration airplane. The surface may be a fixed, movable, or variable geometry surface, with or without control surfaces.

*Glider* means a heavier-than-air aircraft, that is supported in flight by the dynamic reaction of the air against its lifting surfaces and whose free flight does not depend principally on an engine.

*Go-around power or thrust setting* means the maximum allowable in-flight power or thrust setting identified in the performance data.

consisting usually of conventional propellers, is independent of the rotor system.

*Gyroplane* means a rotorcraft whose rotors are not engine-driven except for initial starting, but are made to rotate by action of the air when the rotorcraft is moving; and whose means of propulsion, consisting usually of conventional propellers, is independent of the rotor system.

*Helicopter* means a rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotors.

*Heliport* means an area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters.

*Idle thrust* means the jet thrust obtained with the engine power control lever set at the stop for the least thrust position at which it can be placed.

*IFR conditions* means weather conditions below the minimum for flight under visual flight rules.

*IFR over-the-top*, with respect to the operation of aircraft, means the operation of an aircraft over-the-top on an IFR flight plan when cleared by air traffic control to maintain "VFR conditions" or "VFR conditions on top".

*Indicated airspeed* means the speed of an aircraft as shown on its pitot static airspeed indicator calibrated to reflect standard atmosphere adiabatic compressible flow at sea level uncorrected for airspeed system errors.

*Instrument* means a device using an internal mechanism to show visually or aurally the attitude, altitude, or operation of an aircraft or aircraft part. It includes electronic devices for automatically controlling an aircraft in flight.

*Interstate air commerce* means the carriage by aircraft of persons or property for compensation or hire, or the carriage of mail by aircraft, or the operation or navigation of aircraft in the conduct or furtherance of a business or vocation, in commerce between a place in any State of the United States, or the District of Columbia, and a place in any other State of the United States, or the District of Columbia; or between places in the same State of the United States through the airspace over any place outside thereof; or between places in



(2) Between places in the same State through the airspace over any place outside that State; or

(3) Between places in the same possession of the United States;

whether that commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.

*Intrastate air transportation* means the carriage of persons or property as a common carrier for compensation or hire, by turbojet-powered aircraft capable of carrying thirty or more persons, wholly within the same State of the United States.

*Kite* means a framework, covered with paper, cloth, metal, or other material, intended to be flown at the end of a rope or cable, and having as its only support the force of the wind moving past its surfaces.

*Landing gear extended speed* means the maximum speed at which an aircraft can be safely flown with the landing gear extended.

*Landing gear operating speed* means the maximum speed at which the landing gear can be safely extended or retracted.

*Large aircraft* means aircraft of more than 12,500 pounds, maximum certificated takeoff weight.

*Lighter-than-air aircraft* means aircraft that can rise and remain suspended by using contained gas weighing less than the air that is displaced by the gas.

*Load factor* means the ratio of a specified load to the total weight of the aircraft. The specified load is expressed in terms of any of the following: aerodynamic forces, inertia forces, or ground or water reactions.

*Mach number* means the ratio of true airspeed to the speed of sound.

*Main rotor* means the rotor that supplies the principal lift to a rotorcraft.

*Maintenance* means inspection, overhaul, repair, preservation, and the replacement of parts, but excludes preventive maintenance.

*Major alteration* means an alteration not listed in the aircraft, aircraft engine, or propeller specifications—

(1) That, if improperly done, might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or

(2) That is not done according to accepted practices or cannot be done by elementary operations.

*Manifold pressure* means absolute pressure as measured at the appropriate point in the induction system and usually expressed in inches of mercury.

*Maximum speed for stability characteristics,  $V_{FC}/M_{FC}$*  means a speed that may not be less than a speed midway between maximum operating limit speed ( $V_{MO}/M_{MO}$ ) and demonstrated flight diving speed ( $V_{DF}/M_{DF}$ ), except that, for altitudes where the Mach number is the limiting factor,  $M_{FC}$  need not exceed the Mach number at which effective speed warning occurs.]\*

*Medical certificate* means acceptable evidence of physical fitness on a form prescribed by the Administrator.

*Military operations area (MOA)* means an airspace established outside Class A airspace to separate or segregate certain nonhazardous military activities from IFR traffic and to identify for VFR traffic where these activities are conducted.】

*Minimum descent altitude* means the lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure, where no electronic glide slope is provided.

*Minor alteration* means an alteration other than a major alteration.

*Minor repair* means a repair other than a major repair.

*Navigable airspace* means airspace at and above the minimum flight altitudes prescribed by or under this chapter, including airspace needed for safe takeoff and landing.

*Night* means the time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the American Air Almanac, converted to local time.

*Operational control*, with respect to a flight, means the exercise of authority over initiating, conducting, or terminating a flight.

*Overseas air commerce* means the carriage by aircraft of persons or property for compensation or hire, or the carriage of mail by aircraft, or the operation or navigation of aircraft in the conduct or furtherance of a business or vocation, in commerce between a place in any State of the United States, or the District of Columbia, and any place in a territory or possession of the United States; or between a place in a territory or possession of the United States, and a place in any other territory or possession of the United States.

*Overseas air transportation* means the carriage by aircraft of persons or property as a common carrier or compensation or hire, or the carriage of mail by aircraft, in commerce—

(1) Between a place in a State or the District of Columbia and a place in a possession of the United States; or

(2) Between a place in a possession of the United States and a place in another possession of the United States; whether that commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.

*Over-the-top* means above the layer of clouds or other obscuring phenomena forming the ceiling.

*Parachute* means a device used or intended to be used to retard the fall of a body or object through the air.

*Person* means an individual, firm, partnership, corporation, company, association, joint-stock association, or governmental entity. It includes a trustee, receiver, assignee, or similar representative of any of them.

*Pilotage* means navigation by visual reference to landmarks.

*Pilot in command* means the pilot responsible for the operation and safety of an aircraft during flight time.

*Pitch setting* means the propeller blade setting as determined by the blade angle measured in a manner, and at a radius, specified by the instruction manual for the propeller.

bly operations.

**[Prohibited area** means an airspace designated under part 73 within which no person may operate an aircraft without the permission of the using agency.]

*Propeller* means a device for propelling an aircraft that has blades on an engine-driven shaft and that, when rotated, produces by its action on the air, a thrust approximately perpendicular to its plane of rotation. It includes control components normally supplied by its manufacturer, but does not include main and auxiliary rotors or rotating airfoils of engines.

*Public aircraft* means an aircraft used only for the United States Government, or owned and operated (except for commercial purposes), or exclusively leased for at least 90 continuous days, by a government (except the United States Government), including a State, the District of Columbia, or a territory or possession of the United States, or political subdivision of that government; but does not include a government-owned aircraft transporting property for commercial purposes, or transporting passengers other than transporting (for other than commercial purposes) crewmembers or other persons aboard the aircraft whose presence is required to perform, or is associated with the performance of, a governmental function such as firefighting, search and rescue, law enforcement, aeronautical research, or biological or geological resource management; or transporting (for other than commercial purposes) persons aboard the aircraft if the aircraft is operated by the Armed Forces or an intelligence agency of the United States. An aircraft described in the preceding sentence shall, notwithstanding any limitation relating to use of the aircraft for commercial purposes, be considered to be a public aircraft for the purposes of this Chapter without regard to whether the aircraft is operated by a unit of government on behalf of another unit of government, pursuant to a cost reimbursement agreement between such units of government, if the unit of government on whose behalf the operation is conducted certifies to the Administrator of the Federal Aviation Administration that the operation was necessary to respond

under part 33 of this chapter, and limited in use to the time required to complete the flight after the failure of one engine of a multiengine rotorcraft.

*Rated maximum continuous augmented thrust*, with respect to turbojet engine type certification, means the approved jet thrust that is developed statically or in flight, in standard atmosphere at a specified altitude, with fluid injection or with the burning of fuel in a separate combustion chamber, within the engine operating limitations established under part 33 of this chapter, and approved for unrestricted periods of use.

*Rated maximum continuous power*, with respect to reciprocating, turbopropeller, and turboshaft engines, means the approved brake horsepower that is developed statically or in flight, in standard atmosphere at a specified altitude, within the engine operating limitations established under part 33, and approved for unrestricted periods of use.

*Rated maximum continuous thrust*, with respect to turbojet engine type certification, means the approved jet thrust that is developed statically or in flight, in standard atmosphere at a specified altitude, without fluid injection and without the burning of fuel in a separate combustion chamber, within the engine operating limitations established under part 33 of this chapter, and approved for unrestricted periods of use.

*Rated takeoff augmented thrust*, with respect to turbojet engine type certification, means the approved jet thrust that is developed statically under standard sea level conditions, with fluid injection or with the burning of fuel in a separate combustion chamber, within the engine operating limitations established under part 33 of this chapter, and limited in use to periods of not over 5 minutes for takeoff operation.

*Rated takeoff power*, with respect to reciprocating, turbopropeller, and turboshaft engine type certification, means the approved brake horsepower that is developed statically under standard sea level conditions, within the engine operating limitations established under part 33, and limited in use to periods of not over 5 minutes for takeoff operation.

*Rated takeoff thrust*, with respect to turbojet engine type certification, means the approved jet

thrust of turbojet engines, means the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under part 33 of this chapter, and limited in use to a period of not more than 30 minutes after the failure of one engine of a multiengine rotorcraft.

*Rated 2 1/2-minute OEI power*, with respect to rotorcraft turbine engines, means the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under part 33 of this chapter, and limited in use to a period of not more than 2 1/2 minutes after the failure of one engine of a multiengine rotorcraft.

*Rating* means a statement that, as a part of a certificate, sets forth special conditions, privileges, or limitations.

*Reporting point* means a geographical location in relation to which the position of an aircraft is reported.

**[Restricted area** means an airspace designated under part 73 within which the flight of aircraft, while not wholly prohibited, is subject to restriction.]

*RNAV way point (W/P)* means a predetermined geographical position used for route or instrument approach definition or progress reporting purposes that is defined relative to a VORTAC station position.

*Rocket* means an aircraft propelled by ejected expanding gases generated in the engine from self-contained propellants and not dependent on the intake of outside substances. It includes any part which becomes separated during the operation.

*Rotorcraft* means a heavier-than-air aircraft that depends principally for its support in flight on the lift generated by one or more rotors.

*Rotorcraft-load combination* means the combination of a rotorcraft and an external-load, including the external-load attaching means. Rotorcraft-load combinations are designated as Class A, Class B, Class C, and Class D, as follows—

(1) *Class A rotorcraft-load combination* means one in which the external load cannot move

the rotorcraft operation.

(4) *Class D rotorcraft-load combination* means one in which the external-load is other than a Class A, B, or C and has been specifically approved by the Administrator for that operation.

*Route segment* means a part of a route. Each end of that part is identified by—

(1) a continental or insular geographical location; or

(2) a point at which a definite radio fix can be established.

*Sea level engine* means a reciprocating aircraft engine having a rated takeoff power that is producible only at sea level.

*Second in command* means a pilot who is designated to be second in command of an aircraft during flight time.

*Show*, unless the context otherwise requires, means to show to the satisfaction of the Administrator.

*Small aircraft* means aircraft of 12,500 pounds or less, maximum certificated takeoff weight.

*Special VFR conditions* mean meteorological conditions that are less than those required for basic VFR flight in controlled airspace and in which some aircraft are permitted flight under visual flight rules.

*Special VFR operations* means aircraft operating in accordance with clearances within controlled airspace in meteorological conditions less than the basic VFR weather minima. Such operations must be requested by the pilot and approved by ATC.

*Standard atmosphere* means the atmosphere defined in U.S. Standard Atmosphere, 1962 (Geopotential altitude tables).

*Stopway* means an area beyond the takeoff runway, no less wide than the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff, without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.

*Takeoff power*—

brake horsepower that is developed under static conditions at a specified altitude and atmospheric temperature, and under the maximum conditions of rotorshaft rotational speed and gas temperature approved for the normal take off, and limited in continuous use to the period of time shown in the approved engine specification.

*Takeoff safety speed* means a referenced airspeed obtained after lift-off at which the required one-engine-inoperative climb performance can be achieved.

*Takeoff thrust*, with respect to turbine engines, means the jet thrust that is developed under static conditions at a specific altitude and atmospheric temperature under the maximum conditions of rotorshaft rotational speed and gas temperature approved for the normal takeoff, and limited in continuous use to the period of time shown in the approved engine specification.

*Tandem wing configuration* means a configuration having two wings of similar span, mounted in tandem.

*TCAS I* means a TCAS that utilizes interrogations of, and replies from, airborne radar beacon transponders and provides traffic advisories to the pilot.

*TCAS II* means a TCAS that utilizes interrogations of, and replies from airborne radar beacon transponders and provides traffic advisories and resolution advisories in the vertical plane.

*TCAS III* means a TCAS that utilizes interrogation of, and replies from, airborne radar beacon transponders and provides traffic advisories and resolution advisories in the vertical and horizontal planes to the pilot.

*Time in service*, with respect to maintenance time records, means the time from the moment an aircraft leaves the surface of the earth until it touches it at the next point of landing.

*True airspeed* means the airspeed of an aircraft relative to undisturbed air. True airspeed is equal to equivalent airspeed multiplied by  $(\rho_0/\rho)^{1/2}$ .

*Traffic pattern* means the traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from, an airport.

*Type*—

1049G and 1049H; and F-27 and F-27F.

(3) As used with respect to the certification of aircraft engines means those engines which are similar in design. For example, JT8D and JT8D-7 are engines of the same type, and JT9D-3A and JT9D-7 are engines of the same type.

*United States*, in a geographical sense, means (1) the States, the District of Columbia, Puerto Rico, and the possessions, including the territorial waters, and (2) the airspace of those areas.

*United States air carrier* means a citizen of the United States who undertakes directly by lease, or other arrangement, to engage in air transportation.

*VFR over-the-top*, with respect to the operation of aircraft, means the operation of an aircraft over-the-top under VFR when it is not being operated on an IFR flight plan.

**[Warning area** means an airspace of defined dimensions, extending from 3 nautical miles outward from the coast of the United States, that contains activity that may be hazardous to nonparticipating aircraft. The purpose of such warning areas is to warn nonparticipating pilots of the potential danger. A warning area may be located over domestic or international waters or both.]

*Winglet or tip fin* means an out-of-plane surface extending from a lifting surface. The surface may or may not have control surfaces.

(Amdt. 1-9, Eff. 9/26/65); (Amdt. 1-10, Eff. 3/29/66); (Amdt. 1-12, Eff. 8/7/67); (Amdt. 1-13, Eff. 8/3/67); (Amdt. 1-14, Eff. 11/18/67); (Amdt. 1-16, Eff. 5/8/70); (Amdt. 1-17, Eff. 6/25/70); (Amdt. 1-19, Eff. 9/18/70); (Amdt. 1-20, Eff. 2/4/71); (Amdt. 1-21, Eff. 7/20/71); (Amdt. 1-22, Eff. 4/14/72); (Amdt. 1-23, Eff. 10/31/74); (Amdt. 1-24, Eff. 3/15/75); (Amdt. 1-25, Eff. 12/9/76); (Amdt. 1-26, Eff. 5/2/77); (Amdt. 1-29, Eff. 3/1/78); (Amdt. 1-30, Eff. 5/8/81); (Amdt. 1-31, Eff. 3/2/83); (Amdt. 1-32, Eff. 12/6/84); (Amdt. 1-33, Eff. 1/6/87); (Amdt. 1-34, Eff. 10/3/88); (Amdt. 1-35, Eff. 2/9/89); (Amdt. 1-36, Eff. 8/18/90); (Amdt. 1-37, Eff. 2/4/91); (Amdt. 1-38, Eff. 9/16/93); (Amdt. 1-39, Eff. 4/23/95); (Amdt. 1-40, Eff. 7/10/95); [(Amdt. 1-42, Eff. 1/15/96)]; [(Amdt. 1-43, Eff. 3/11/96)]

*CONSOL* or *CONSOLAN* means a kind of low or medium frequency long range navigational aid.

*DH* means decision height.

*DME* means distance measuring equipment compatible with TACAN.

*EAS* means equivalent airspeed.

*FAA* means Federal Aviation Administration.

*FM* means fan marker.

*GS* means glide slope.

*HIRL* means high-intensity runway light system.

*IAS* means indicated airspeed.

*ICAO* means International Civil Aviation Organization.

*IFR* means instrument flight rules.

*ILS* means instrument landing system.

*IM* means ILS inner marker.

*INT* means intersection.

*LDA* means localizer-type directional aid.

*LFR* means low-frequency radio range.

*LMM* means compass locator at middle marker.

*LOC* means ILS localizer.

*LOM* means compass locator at outer marker.

*M* means mach number.

*MAA* means maximum authorized IFR altitude.

*MALS* means medium intensity approach light system.

*MALSR* means medium intensity approach light system with runway alignment indicator lights.

*MCA* means minimum crossing altitude.

*MDA* means minimum descent altitude.

*MEA* means minimum en route IFR altitude.

*MM* means ILS middle marker.

*MOCA* means minimum obstruction clearance altitude.

*MRA* means minimum reception altitude.

*MSL* means mean sea level.

*NDB (ADF)* means nondirectional beacon (automatic direction finder).

*NOPT* means no procedure turn required.

*OEI* means one engine inoperative.

*OM* means ILS outer marker.

*PAR* means precision approach radar.

*V<sub>RA</sub>* means runway visual range as measured in the touchdown zone area.

*SALS* means short approach light system.

*SSALS* means simplified short approach light system.

*SSALSR* means simplified short approach light system with runway alignment indicator lights.

*TACAN* means ultra-high frequency tactical air navigational aid.

*TAS* means true airspeed.

*TCAS* means a traffic alert and collision avoidance system.

*TDZL* means touchdown zone lights.

*TVOR* means very high frequency terminal omnirange station.

*V<sub>A</sub>* means design maneuvering speed.

*V<sub>B</sub>* means design speed for maximum gust intensity.

*V<sub>C</sub>* means design cruising speed.

*V<sub>D</sub>* means design diving speed.

*V<sub>DF</sub>/M<sub>DF</sub>* means demonstrated flight diving speed.

*V<sub>F</sub>* means design flap speed.

*V<sub>FC</sub>/M<sub>FC</sub>* means maximum speed for stability characteristics.

*V<sub>FE</sub>* means maximum flap extended speed.

*V<sub>H</sub>* means maximum speed in level flight with maximum continuous power.

*V<sub>LE</sub>* means maximum landing gear extended speed.

*V<sub>LO</sub>* means maximum landing gear operating speed.

*V<sub>LOF</sub>* means lift-off speed.

*V<sub>MC</sub>* means minimum control speed with the critical engine inoperative.

*V<sub>MO</sub>/M<sub>MO</sub>* means maximum operating limit speed.

*V<sub>MU</sub>* means minimum unstick speed.

*V<sub>NE</sub>* means never-exceed speed.

*V<sub>NO</sub>* means maximum structural cruising speed.

*V<sub>R</sub>* means rotation speed.

A rotorcraft.

*V<sub>X</sub>* means speed for best angle of climb.

*V<sub>Y</sub>* means speed for best rate of climb.

*V<sub>I</sub>* means takeoff decision speed (formerly denoted as critical engine failure speed).

*V<sub>2</sub>* means takeoff safety speed.

*V<sub>2 min</sub>* means minimum takeoff safety speed.

*VFR* means visual flight rules.

*VHF* means very high frequency.

*VOR* means very high frequency omnirange station.

*VORTAC* means collocated VOR and TACAN. (Amdt. 1-10, Eff. 3/29/66); (Amdt. 1-14, Eff. 11/18/67); (Amdt. 1-15, Eff. 2/25/68); (Amdt. 1-18, Eff. 8/18/70); (Amdt. 1-27, Eff. 9/14/77); (Amdt. 1-28, Eff. 9/21/77); (Amdt. 1-29, Eff. 3/1/78); (Amdt. 1-32, Eff. 12/6/84); (Amdt. 1-34, Eff. 10/3/88); (Amdt. 1-35, Eff. 2/9/89)

### § 1.3 Rules of construction.

(a) In Subchapters A through K of this chapter, unless the context requires otherwise—

(1) Words importing the singular include the plural;

(2) Words importing the plural include the singular; and

(3) Words importing the masculine gender include the feminine.

(b) In Subchapters A through K of this chapter, the word—

(1) *Shall* is used in an imperative sense;

(2) *May* is used in a permissive sense to state authority or permission to do the act prescribed, and the words “no person may . . .” or “a person may not . . .” mean that no person is required, authorized, or permitted to do the act prescribed; and

(3) *Includes* means includes but is not limited to.

(Amdt. 1-10, Eff. 3/29/66)



